AERODATA INTERNATIONAL Nº15

LOCKHEED F-104 STARFIGHTER

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Aerodata International

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No. 15 **Lockheed F-104 Starfighter** *by Philip J. R. Moyes.*

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THE LOCKHEED F-104 STARFIGHTER

By Philip J. R. Moyes

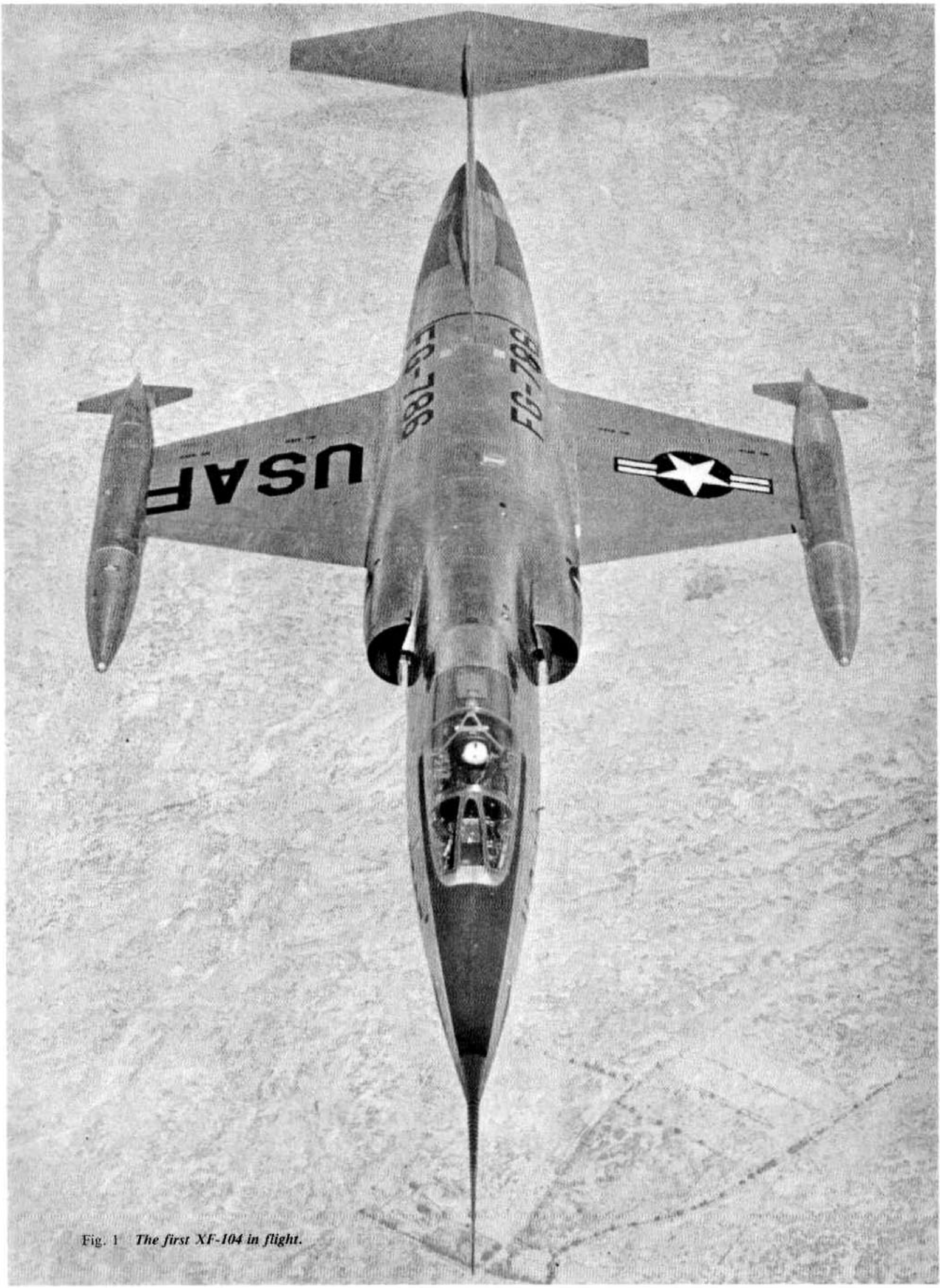


Fig. 1 *The first XF-104 in flight.*

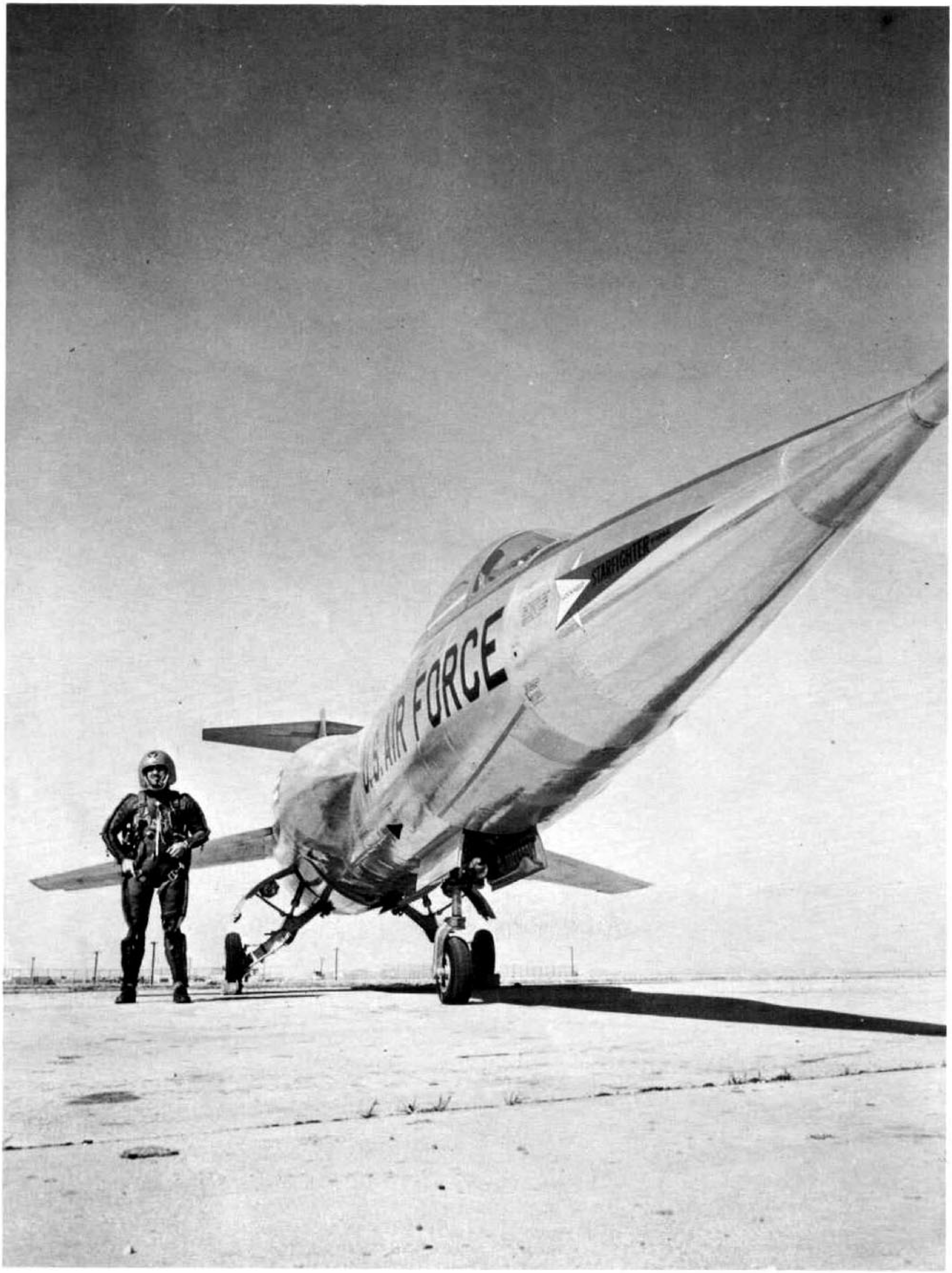


Fig. 2 *The second YF-104 appeared at the marque's press début in April 1956 but had its air intakes blanked off for security reasons.*

Dubbed "the missile with a man in it", the radical Lockheed F-104 Starfighter was the first operational combat aeroplane capable of sustaining Mach 2 speeds and the first plane to hold both speed and altitude records simultaneously.

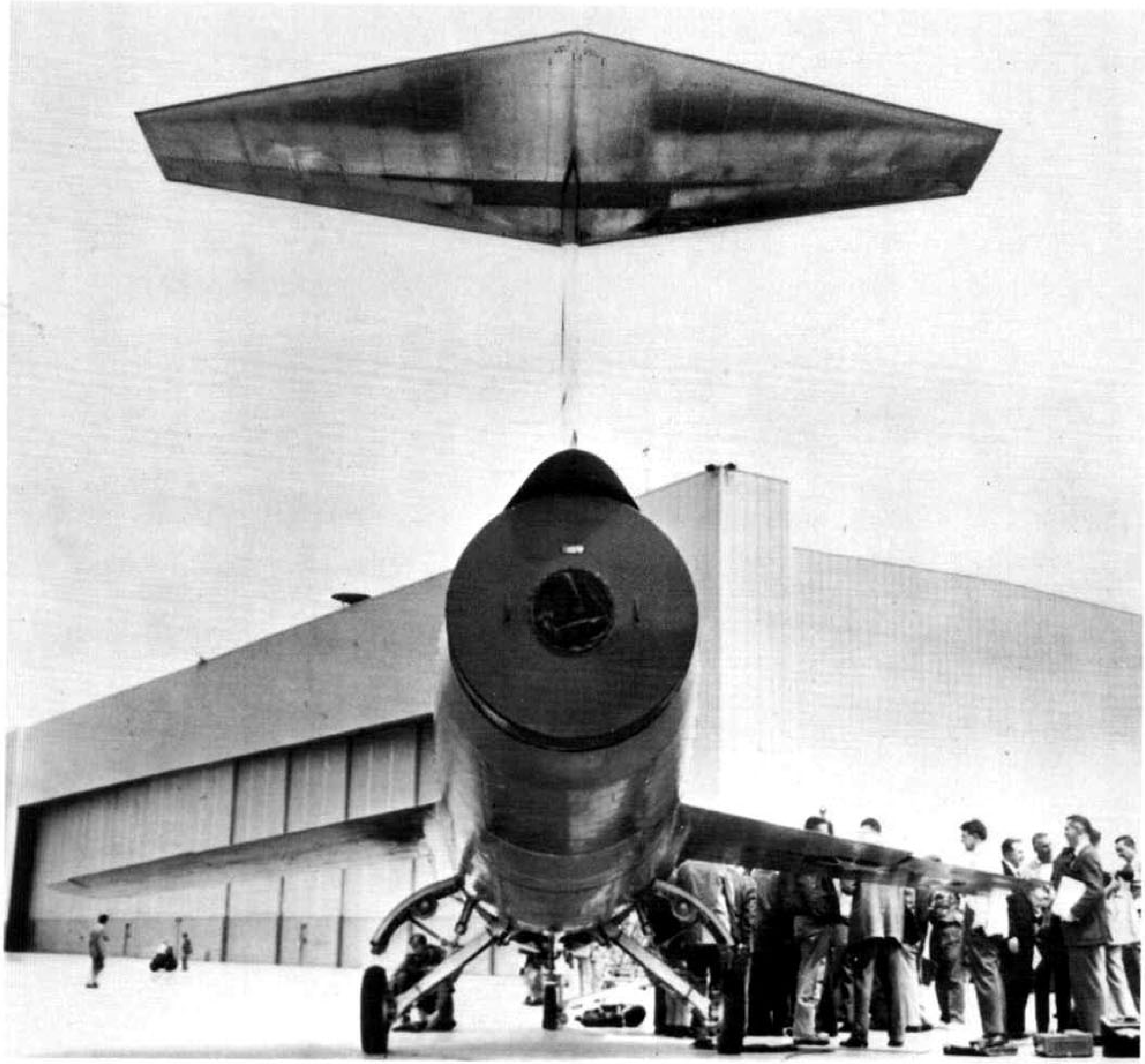


Fig. 3 *Another view of the second YF-104A taken at the press début at Palmdale. Note the extremely narrow-track undercarriage.*

In the 1960s, it was one of the most widely-used fighters in the world. It has also been the centre of more controversy than any other aircraft to date, because of its very high accident rate – at least in German service; yet, all things considered, it undeniably remains one of the most remarkable aircraft of all time.

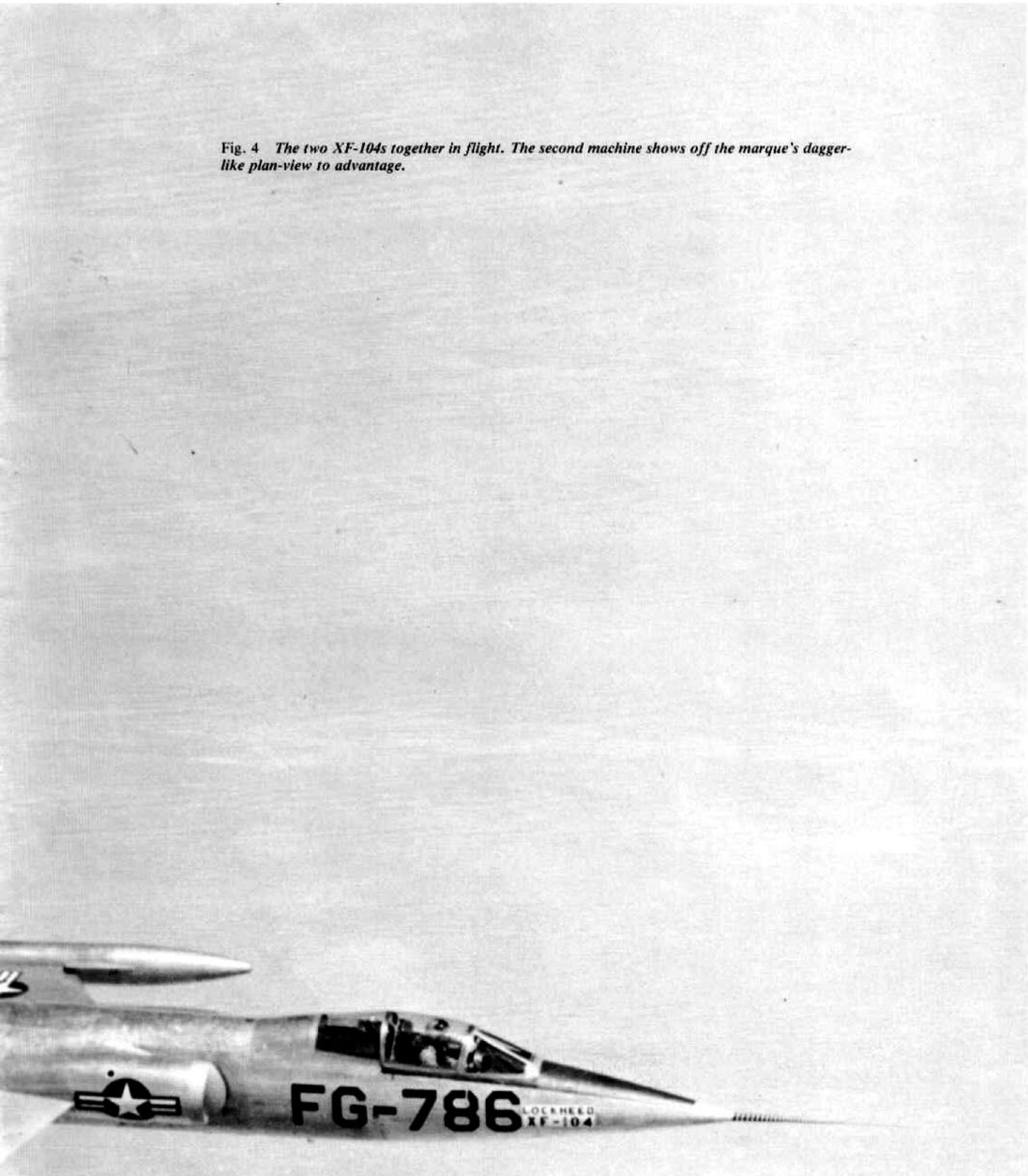
The Starfighter story began in 1951 when USAF experience in Korea with first-generation jet fighters spotlighted the need for a much lighter and faster combat plane. A Lockheed team led by the firm's chief engineer, Clarence L. "Kelly" Johnson and working at top pressure in the famous "Skunk Works" at Burbank, California – a factory so-called because of the striking black and white mat in its entrance lobby – started to scheme a series of light fighter projects. Design work on what eventually became the F-104 began in November 1952, a USAF contract for two prototypes was placed in March 1953, and eleven months later, on 7 February 1954, the first XF-104A (53-7786) flew, in the hands of Lockheed's chief experimental test pilot, Tony LeVier. Both prototypes had a 10,000lb (4536kg) thrust afterburning Wright J-65 engine based on the British Armstrong Siddeley Sapphire.

So secret was the project that the press were not shown the new combat plane that was about twice as fast as any previous operational aircraft until April 1956 when Lockheed and the USAF staged a Hollywood-style preview at the Palmdale jet centre featuring the second YF-104A evaluation machine (55-2956). What spectators saw as a huge curtain parted in the hangar was a pencil-thin fuselage. They saw an unswept, extremely thin wing whose leading edge was almost razor sharp; altogether flipper-like it spanned an unbelievably short 21ft 11in (6680mm) and had an anhedral angle of 10 degrees. They saw a T-shaped "flying tail". And they saw an afterburner-equipped General Electric J-79 engine capable of delivering more thrust per pound of weight than any other engine yet developed.

As part of its main armament the Starfighter incorporated the then also new M-61 Vulcan cannon, with a series of revolving barrels like the old Gatling gun, that could spew 20mm shells at a rate of 6,000 per minute – that's 100 per second – because there might be time for only one quick pass at a supersonic target.

USAF
U.S. AIR FORCE
37786
LOCKHEED
USAF

Fig. 4 *The two XF-104s together in flight. The second machine shows off the marque's dagger-like plan-view to advantage.*



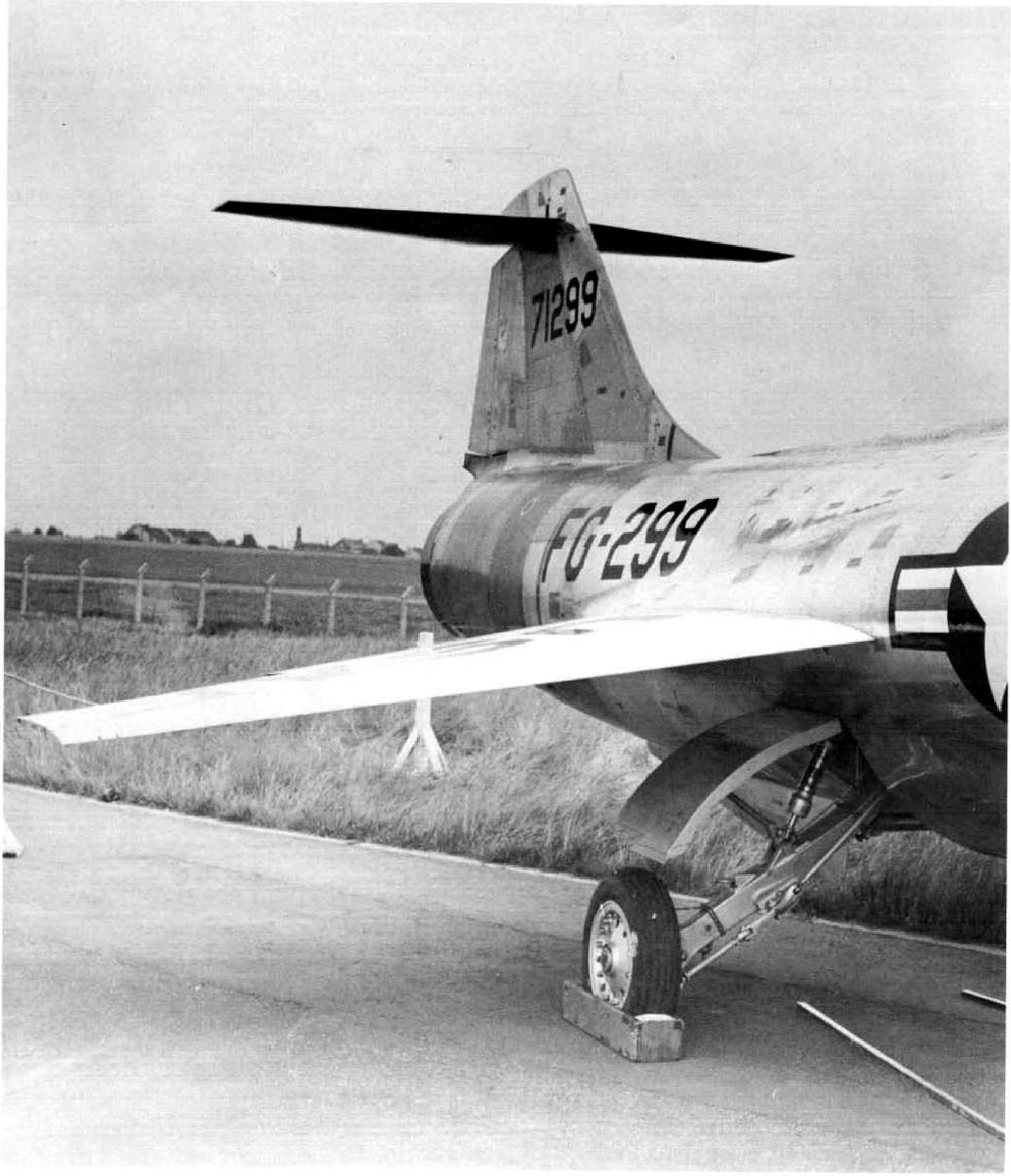


Fig. 5 *Close-up of a two-seat F-104B showing the razor-thin wing and the highly ingenious main undercarriage.*

Because the Starfighter's wings were so thin – thickness/chord ratio was only 3.4 per cent – they were of almost "solid" construction. This meant that the wheels, internal fuel and the Vulcan cannon had to be housed in the fuselage, and as regards the undercarriage in particular, Kelly Johnson's Skunk Works team achieved miracles in designing main legs that were hinged on oblique axes, so that the wheels lay flush within the fuselage skin when retracted.

Fifteen YF-104As were built, and these had shock-control cones on the air intakes to position the supersonic shock waves inside the duct, forward (instead of rearward) retracting nose undercarriage, and a lengthened fuselage to accommodate more fuel. These features were retained in the 153 F-104A production aircraft, the first of which flew on 17 February 1956, but before deliveries could begin the Starfighter was plagued by unexpected and very severe development problems, including a tendency to super-stall, or in other words to stabilise in a stalled attitude from which recovery is impossible. This was not completely cured until April 1957. Another very protracted programme was that which was necessary to eliminate the tendency

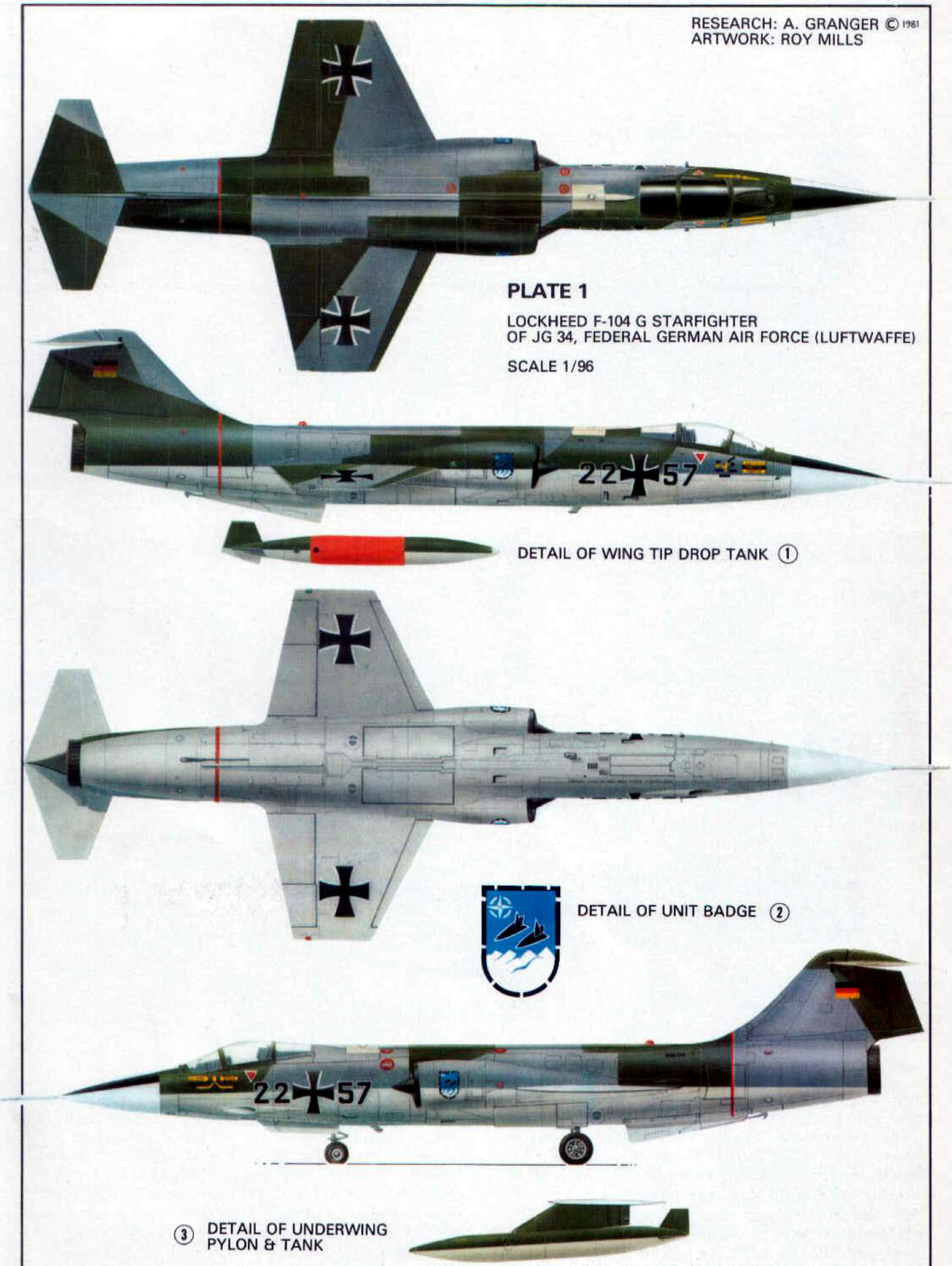


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PLATE 1

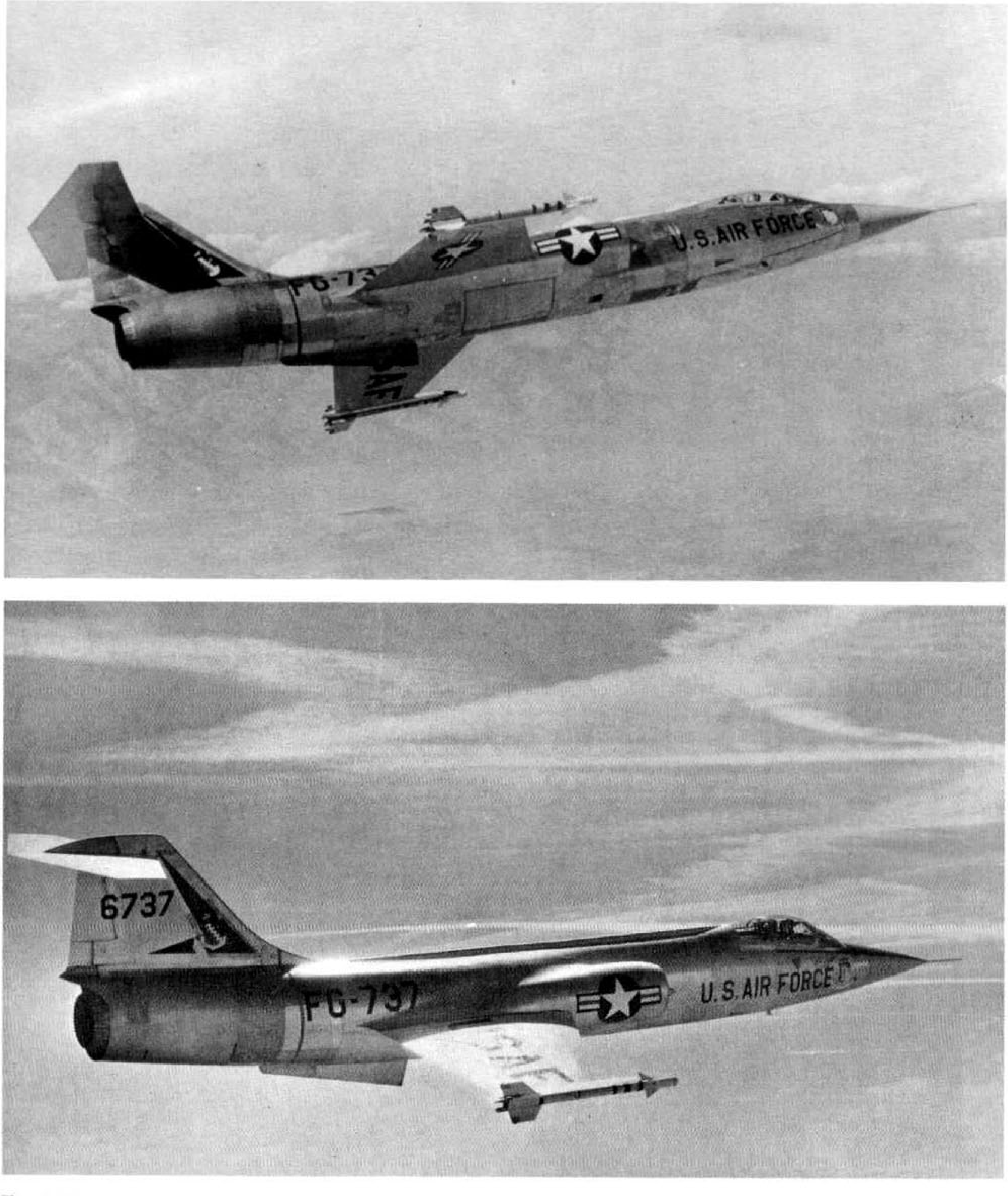
LOCKHEED F-104 G STARFIGHTER
OF JG 34, FEDERAL GERMAN AIR FORCE (LUFTWAFFE)

SCALE 1/96

DETAIL OF WING TIP DROP TANK ①

DETAIL OF UNIT BADGE ②

③ DETAIL OF UNDERWING PYLON & TANK



Figs. 6 & 7 *An F-104A with Sidewinder AAMs at the wing tips.*

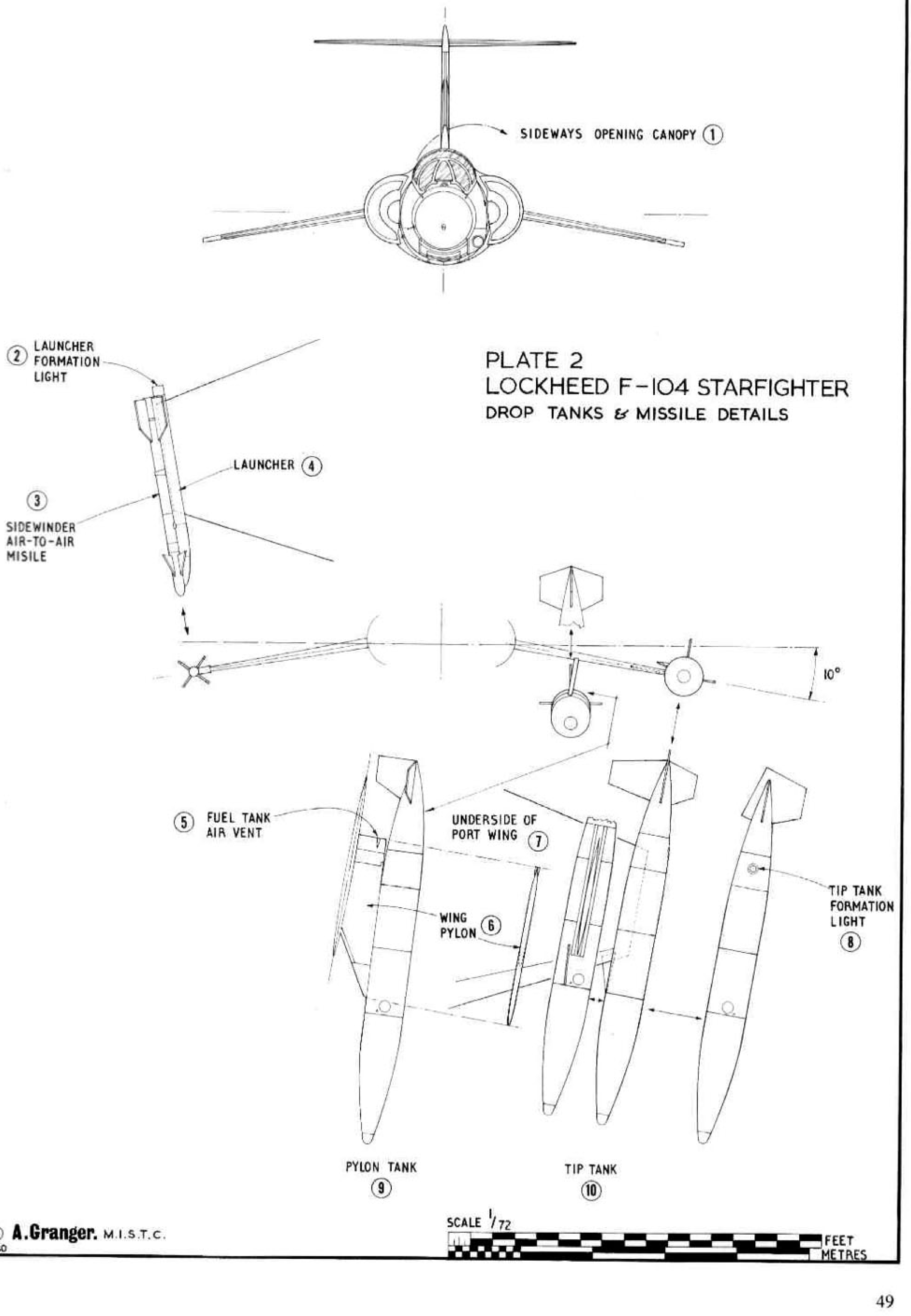
of the wing-tip fuel tanks to slam into the fuselage upon being jettisoned.

The F-104A was finally released for service in January 1958, when deliveries were made to the 83rd Fighter Intercepter Wing, Air Defense Command, at Hamilton AFB, California, but soon afterwards the aircraft were grounded due to serious engine troubles. The problems were cured by the substitution of an improved J79 engine, and the A model was joined in Air Defense Command service by the tandem two-seat F-104B tactical fighter/trainer. A total of 26 B models were built, the prototype making its first flight on 7 February 1956.

As the marque continued to suffer a high accident rate and also because of its poor range and lack of all-weather capability, the A and B models were withdrawn from Air Defense Command by 1960, 24 of them being converted in 1960 and 1961 to remotely-controlled recoverable target drones designated QF-104. After a spell with the National Guard, some F-104As and Bs returned to service with Air Defense Command early in 1963, as a result of the Cuban crisis, and were joined by some F-104Cs transferred from Tactical Air Command.

GENERAL ARRANGEMENT OF
LOCKHEED F-104 STARFIGHTER
SHEET 2 OF 3

PLATE 2
LOCKHEED F-104 STARFIGHTER
DROP TANKS & MISSILE DETAILS



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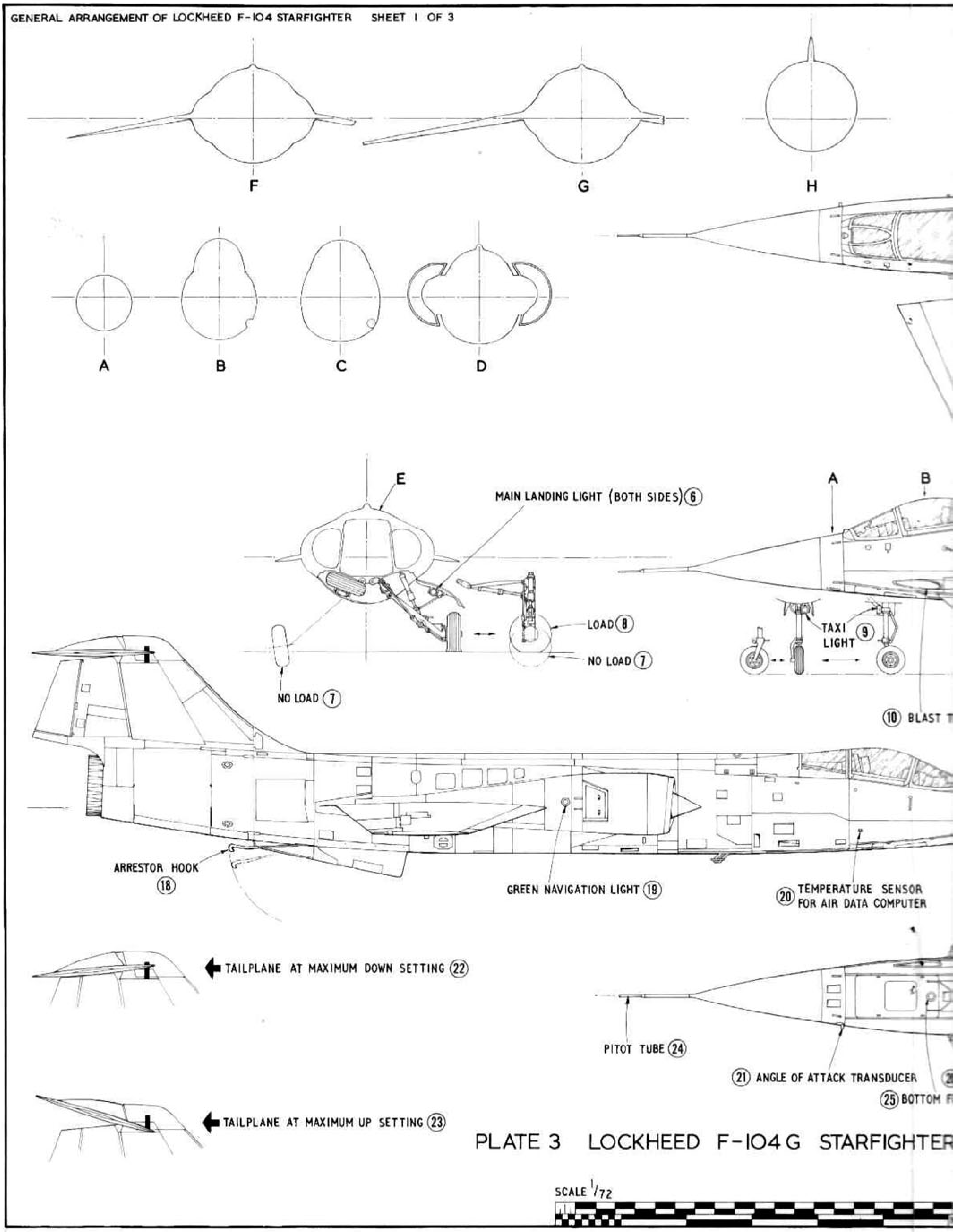
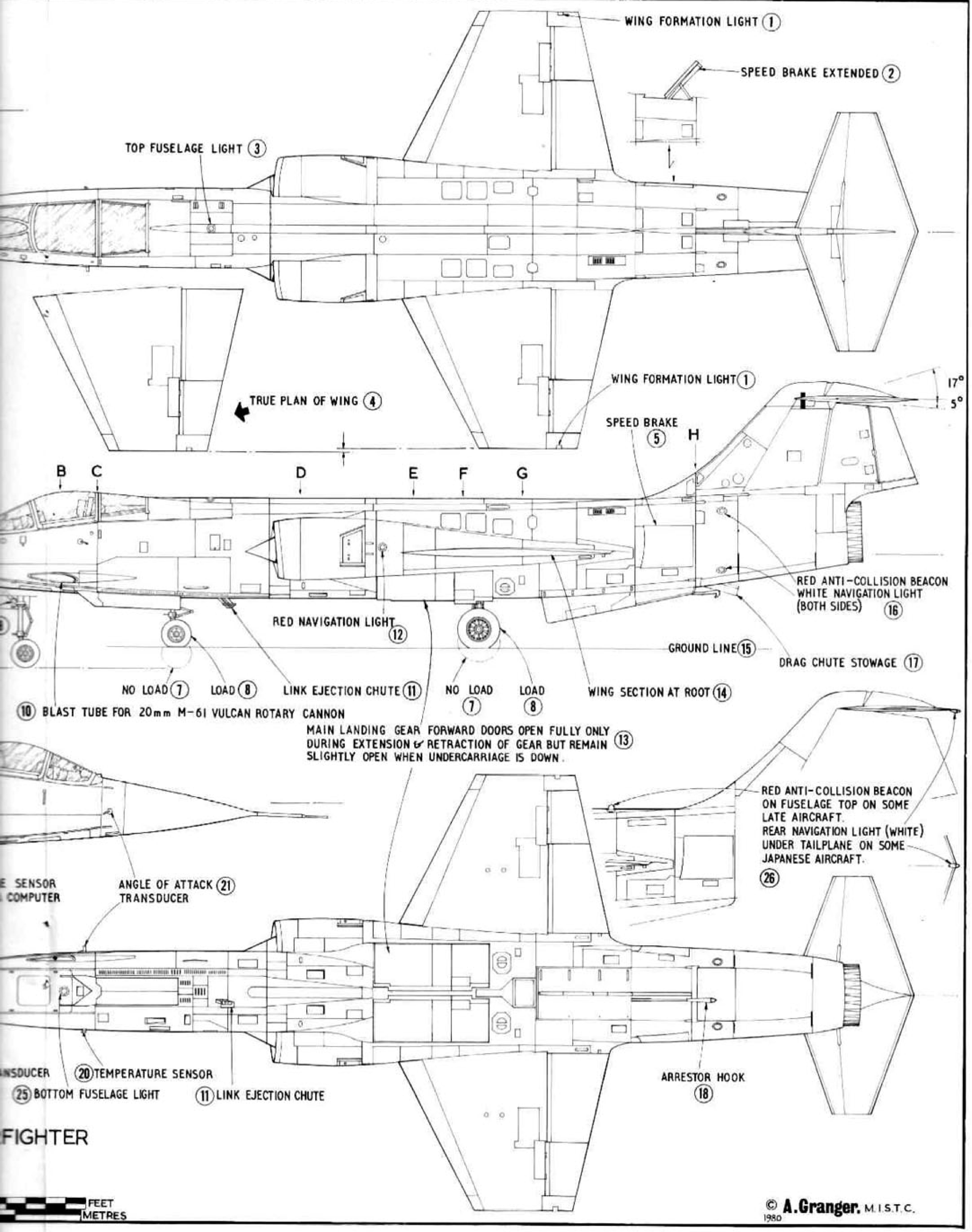

GENERAL ARRANGEMENT OF LOCKHEED F-104 STARFIGHTER SHEET 1 OF 3
F
G
H
A
B
C
D
E
MAIN LANDING LIGHT (BOTH SIDES) ⑥
LOAD ⑧
NO LOAD ⑦
NO LOAD ⑦
TAXI LIGHT ⑨
A
B
⑩ BLAST T
ARRESTOR HOOK ⑱
GREEN NAVIGATION LIGHT ⑲
⑳ TEMPERATURE SENSOR FOR AIR DATA COMPUTER
TAILPLANE AT MAXIMUM DOWN SETTING ㉒
PITOT TUBE ㉔
㉑ ANGLE OF ATTACK TRANSDUCER
㉕ BOTTOM F
TAILPLANE AT MAXIMUM UP SETTING ㉓
SCALE 1/72

PLATE 3 LOCKHEED F-104G STARFIGHTER



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GENERAL ARRANGEMENT OF
LOCKHEED F–104 STARFIGHTER
SHEET 3 OF 3

①

SMALL RUDDER
FITTED TO F-104 A
EARLY F-104 B
& F-104 C

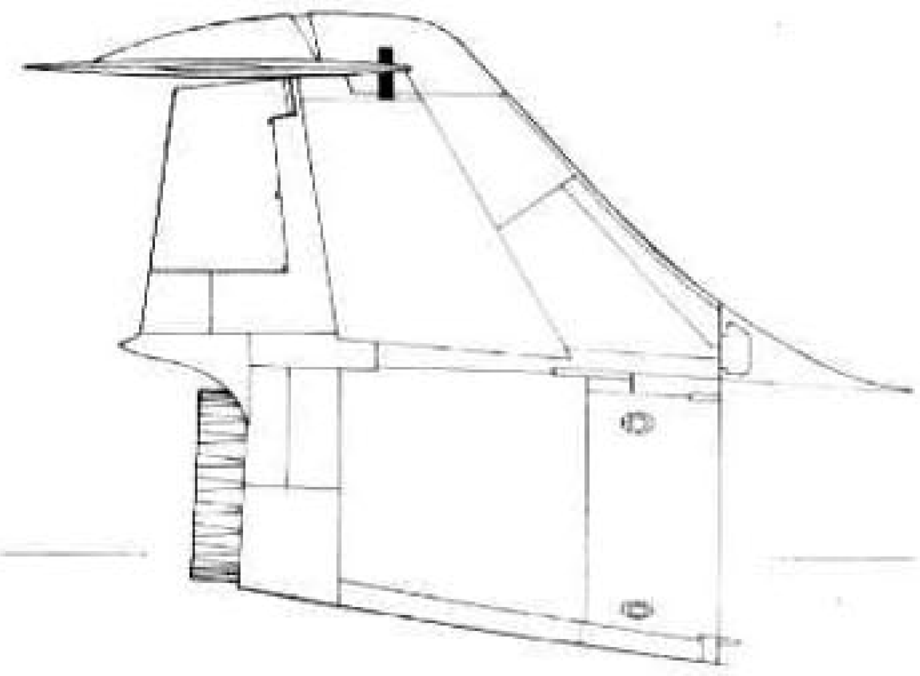
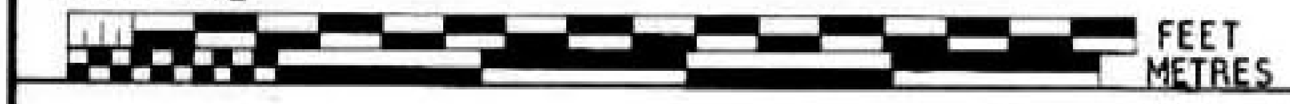
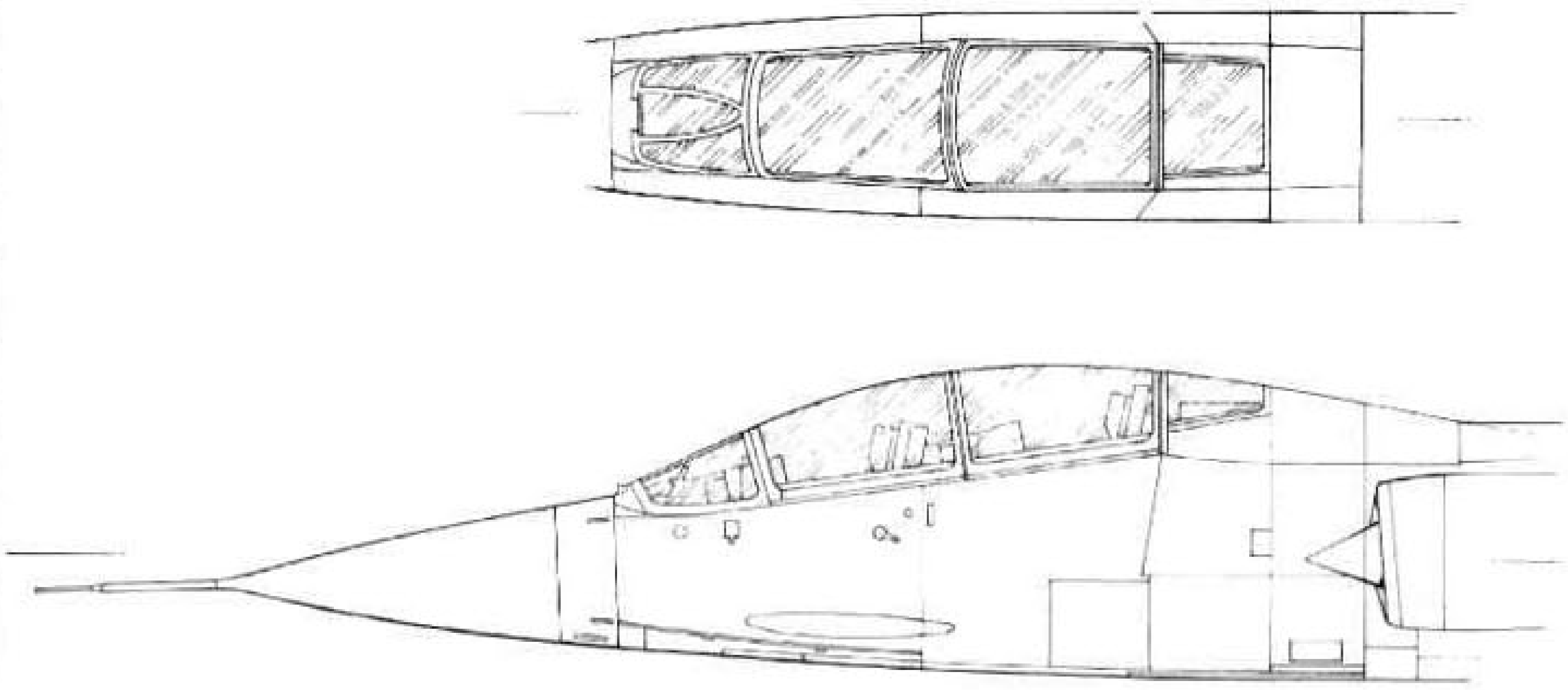


PLATE 4
LOCKHEED F–104 STARFIGHTER
F–104 A, B & C RUDDER & 2 SEAT CANOPY DETAILS

SCALE 1/72



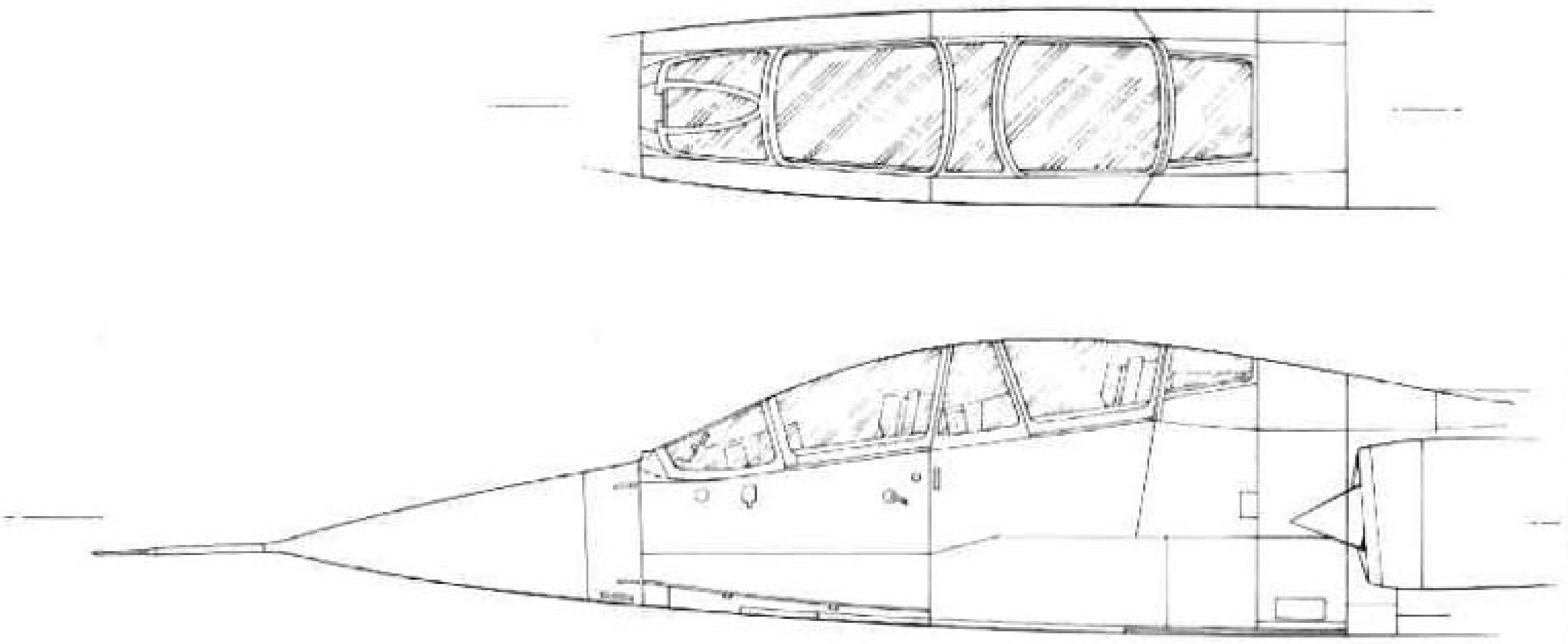


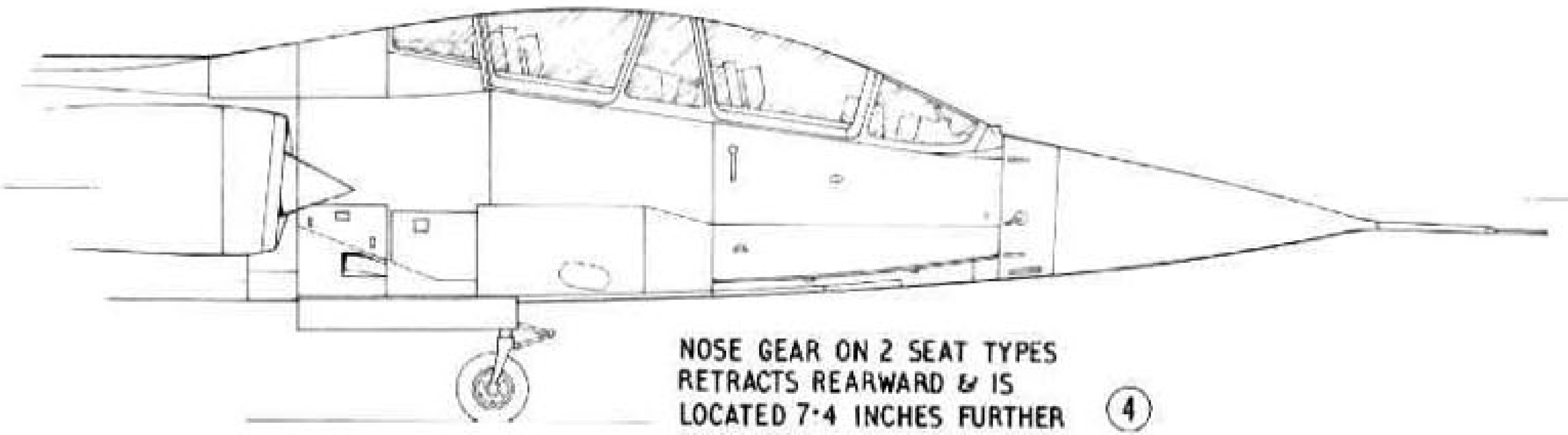
②

2 SEAT CANOPY
FITTED TO F-104 B
& F-104 D

③

2 SEAT CANOPY
FITTED TO TF– 104 G





NOSE GEAR ON 2 SEAT TYPES
RETRACTS REARWARD & IS
LOCATED 7·4 INCHES FURTHER
BACK THAN ON SINGLE SEATERS ④

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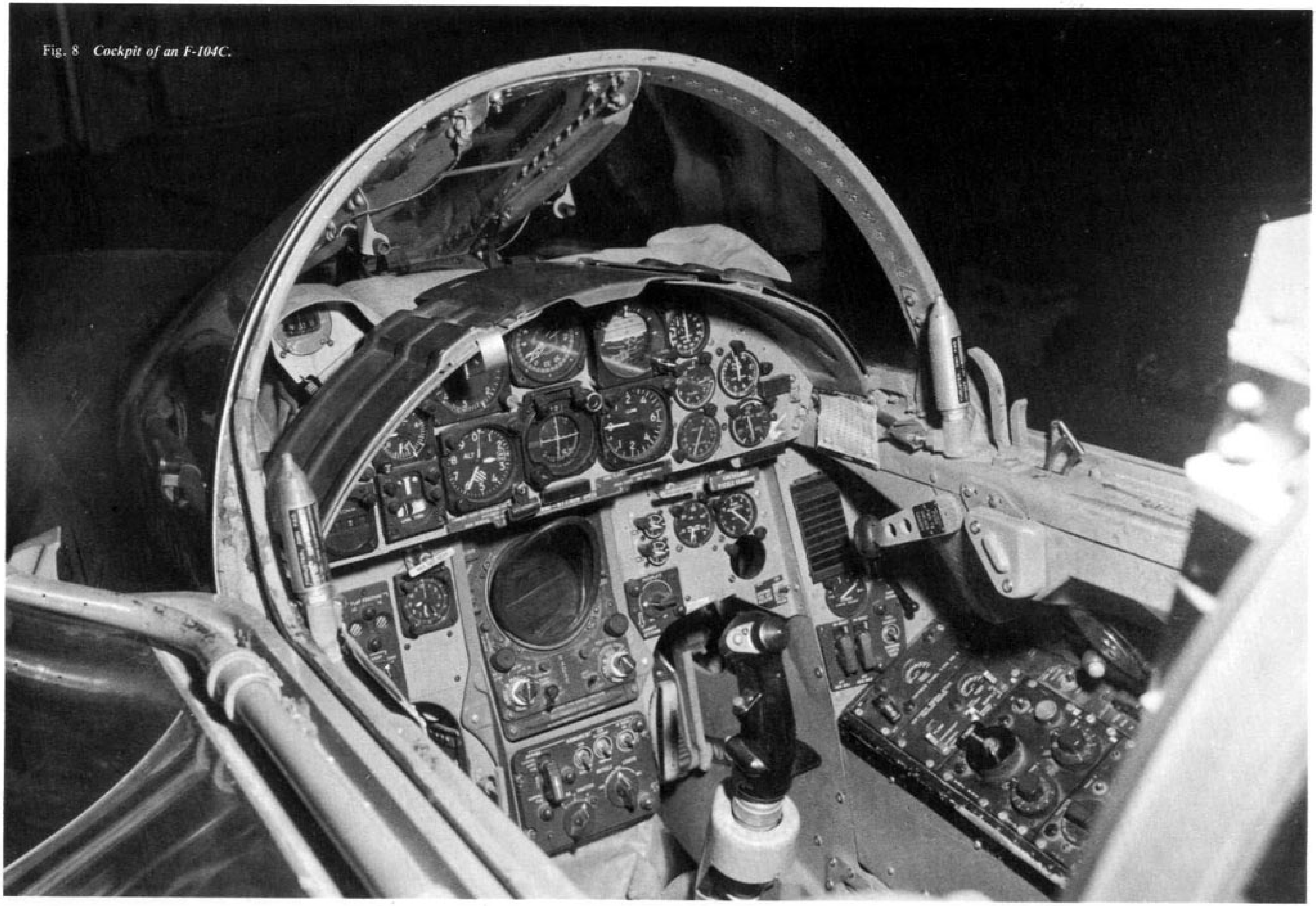
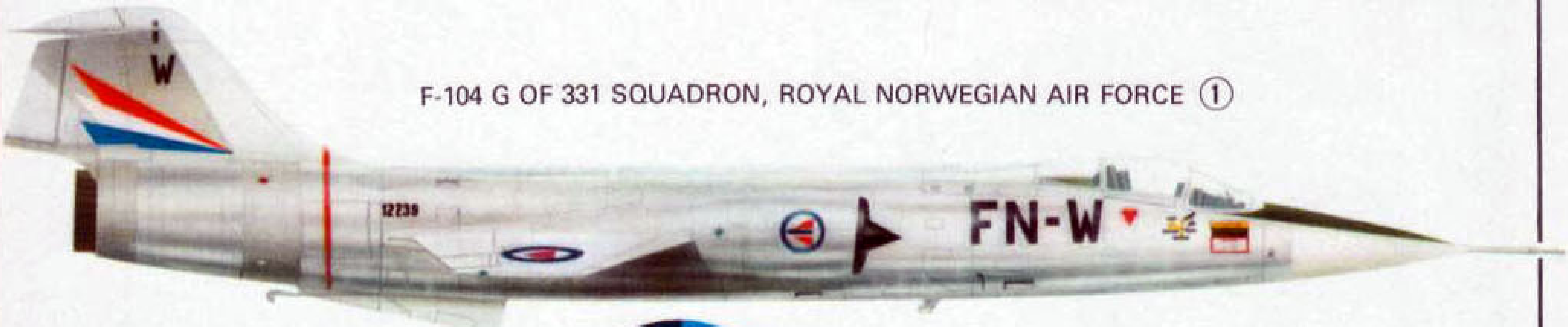


Fig. 8 *Cockpit of an F-104C.*

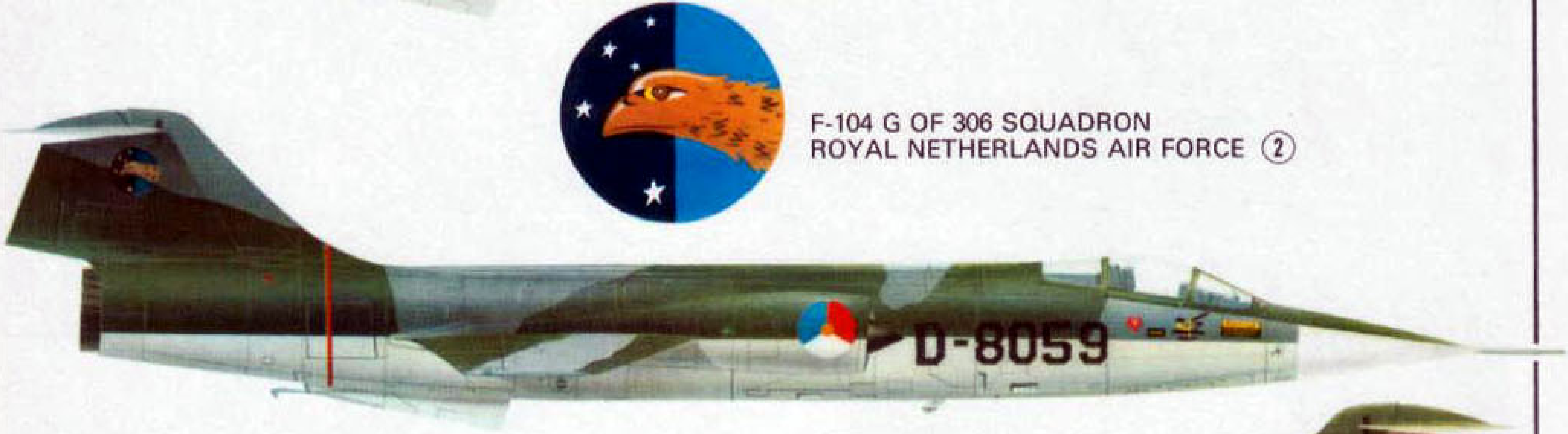
PLATE 5 MARKINGS

SCALE 1/96

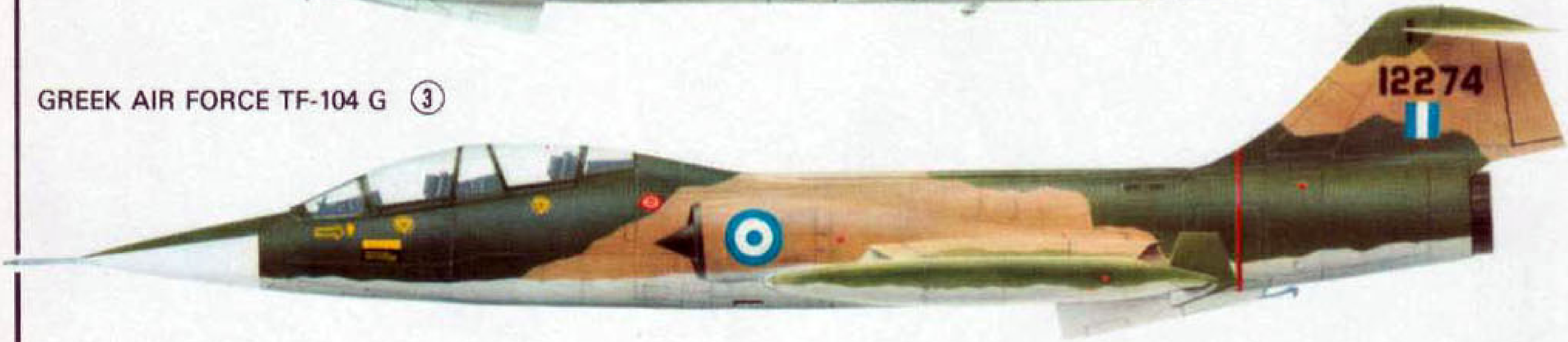
F-104 G OF 331 SQUADRON, ROYAL NORWEGIAN AIR FORCE ①



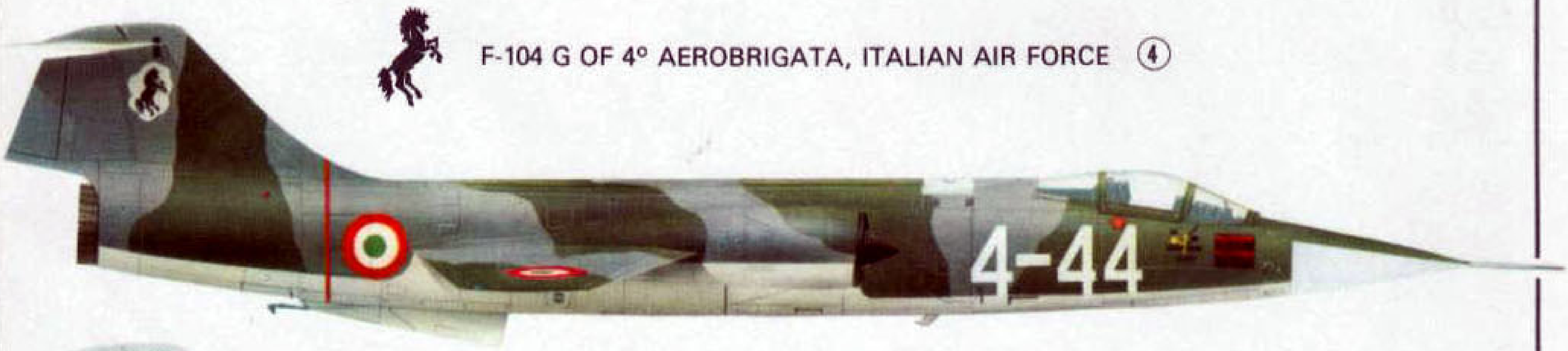
F-104 G OF 306 SQUADRON
ROYAL NETHERLANDS AIR FORCE ②



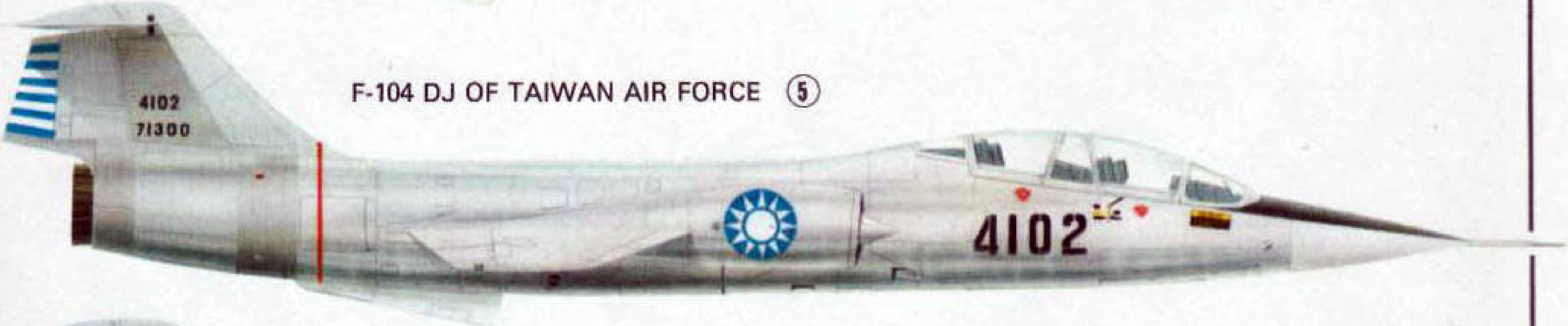
GREEK AIR FORCE TF-104 G ③



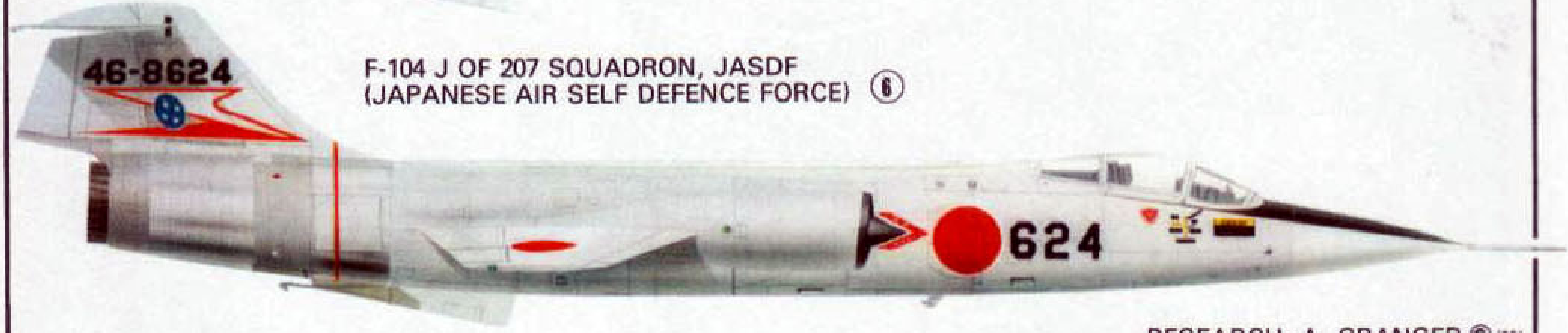
F-104 G OF 4° AEROBRIGATA, ITALIAN AIR FORCE ④



F-104 DJ OF TAIWAN AIR FORCE ⑤



F-104 J OF 207 SQUADRON, JASDF
(JAPANESE AIR SELF DEFENCE FORCE) ⑥



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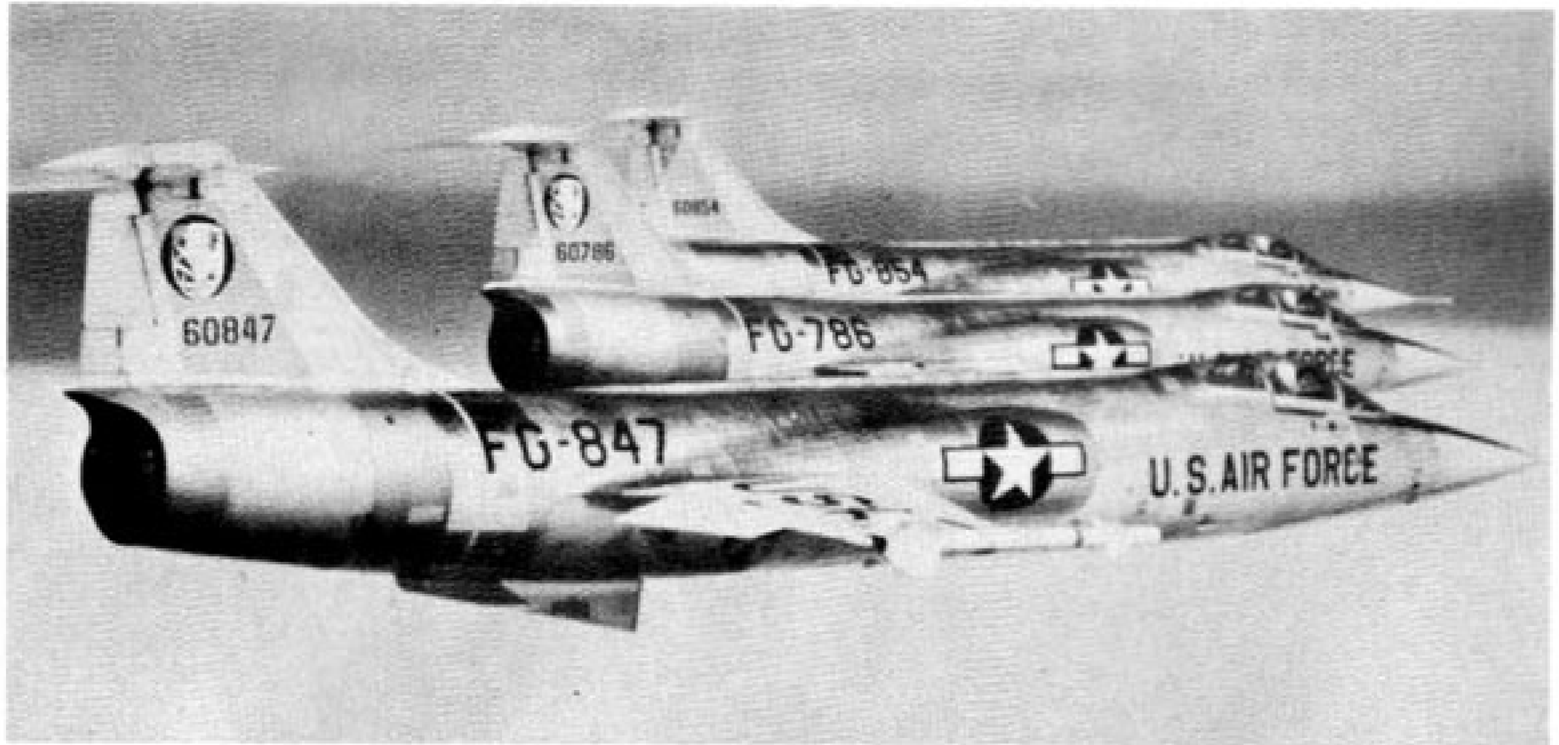


Fig. 9 *Trio of F-104As armed with Sidewinder AAMs.*

Fig. 10 *A camouflaged F-104C on war service in Vietnam. Note flight refuelling probe.*

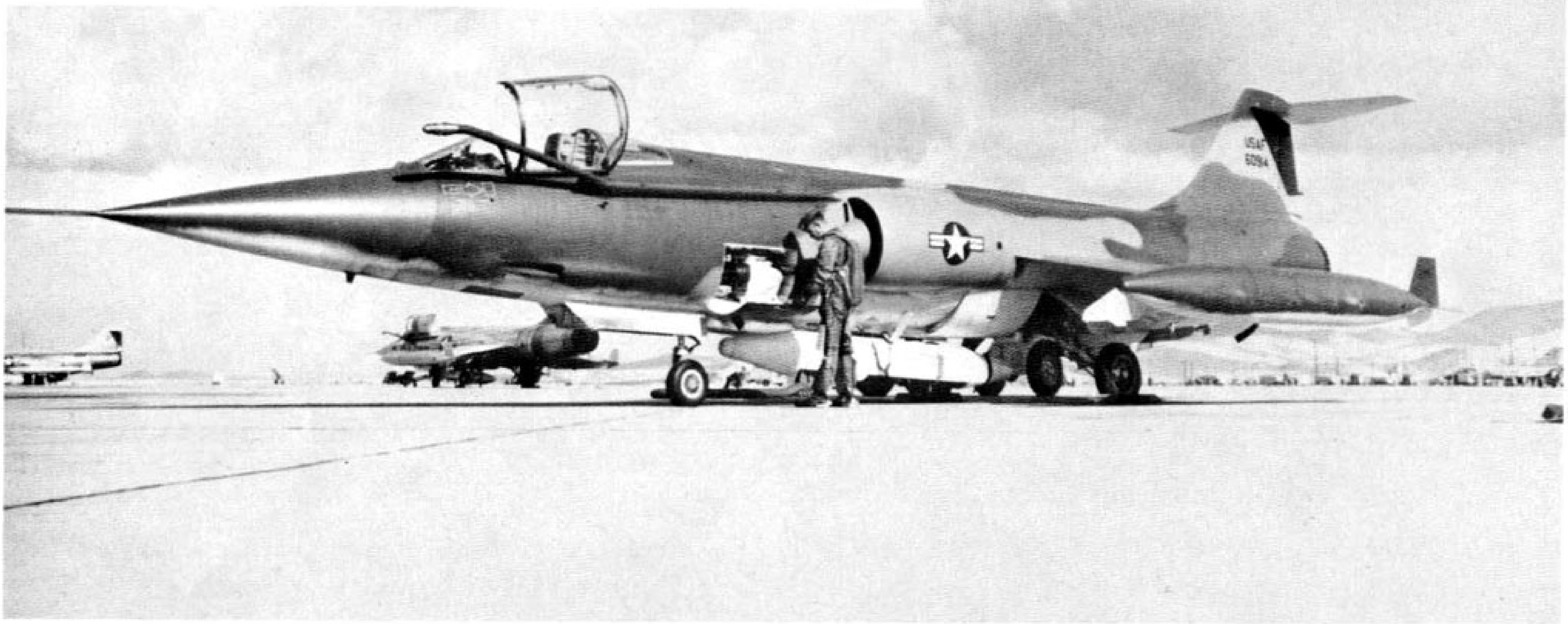
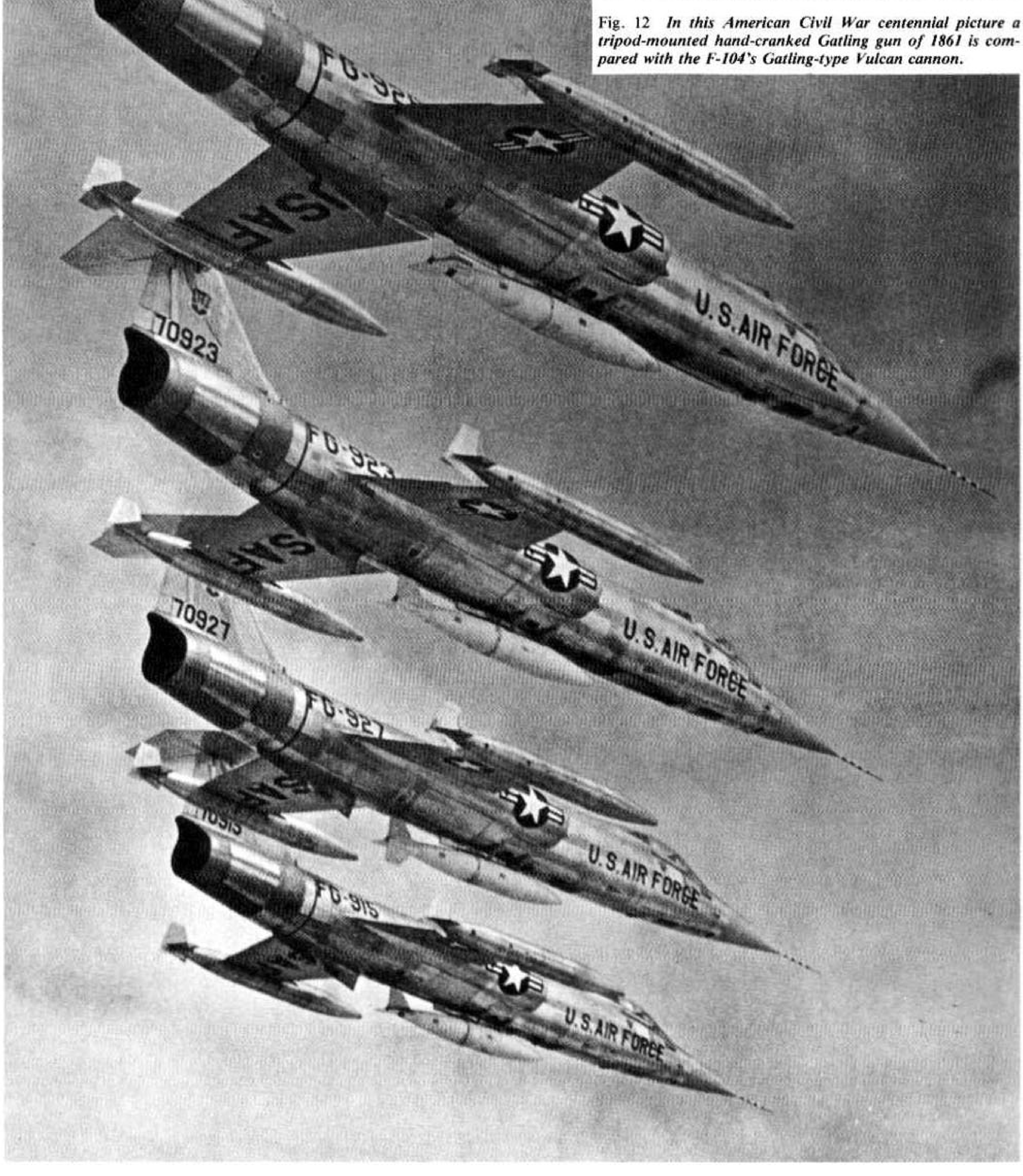


Fig. 11 *Neat echelon formation of C models of the 479th Tactical Fighter Wing carrying centreline and wing-tip drop tanks.*



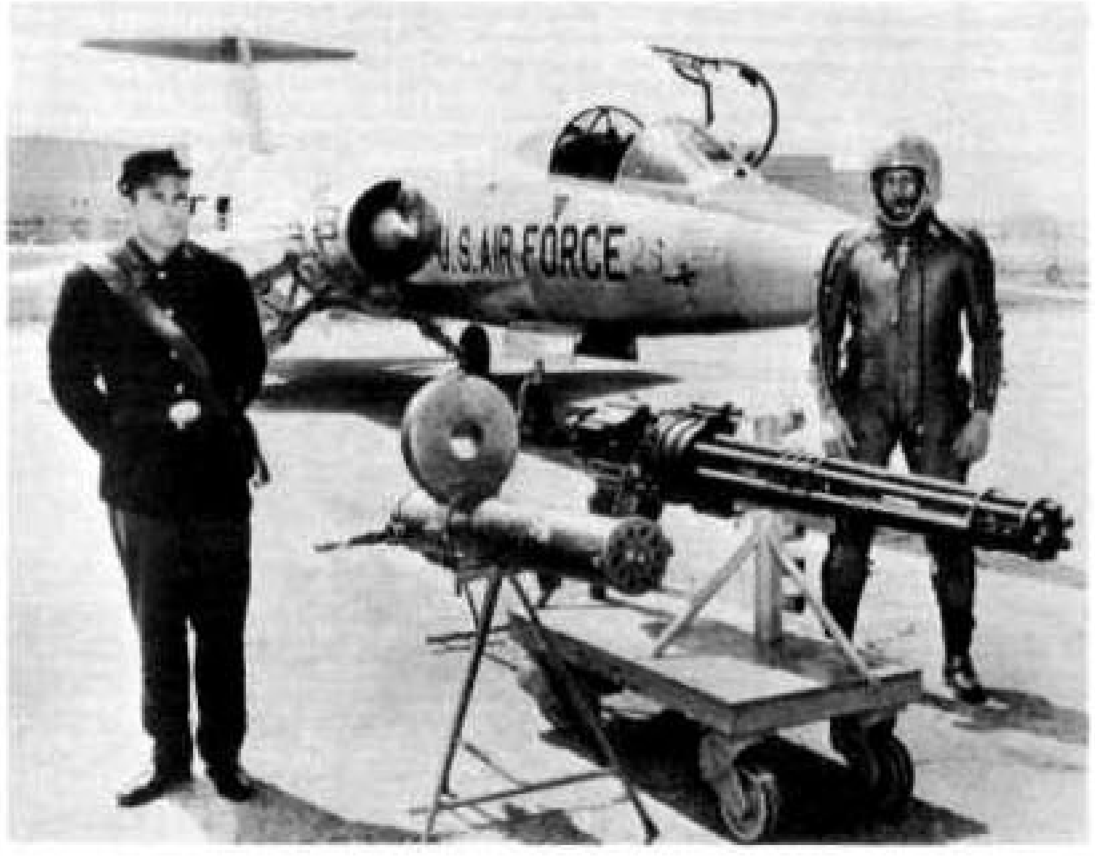


Fig. 12 *In this American Civil War centennial picture a tripod-mounted hand-cranked Gatling gun of 1861 is compared with the F-104's Gatling-type Vulcan cannon.*

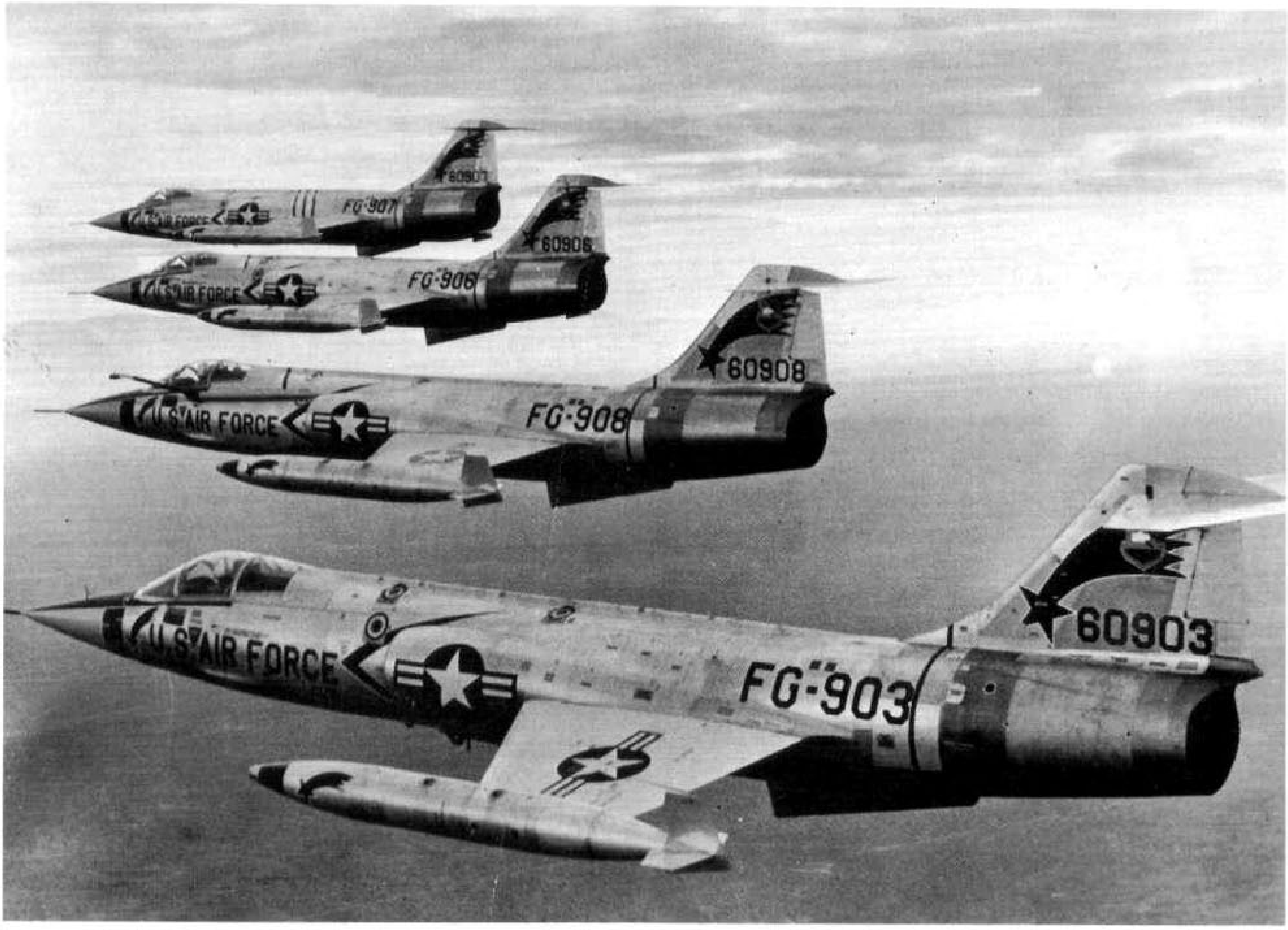


Fig. 13 *Another echelon formation of F-104Cs of the 479th TFW. Note flight refuelling probe on the nose of the second machine.*

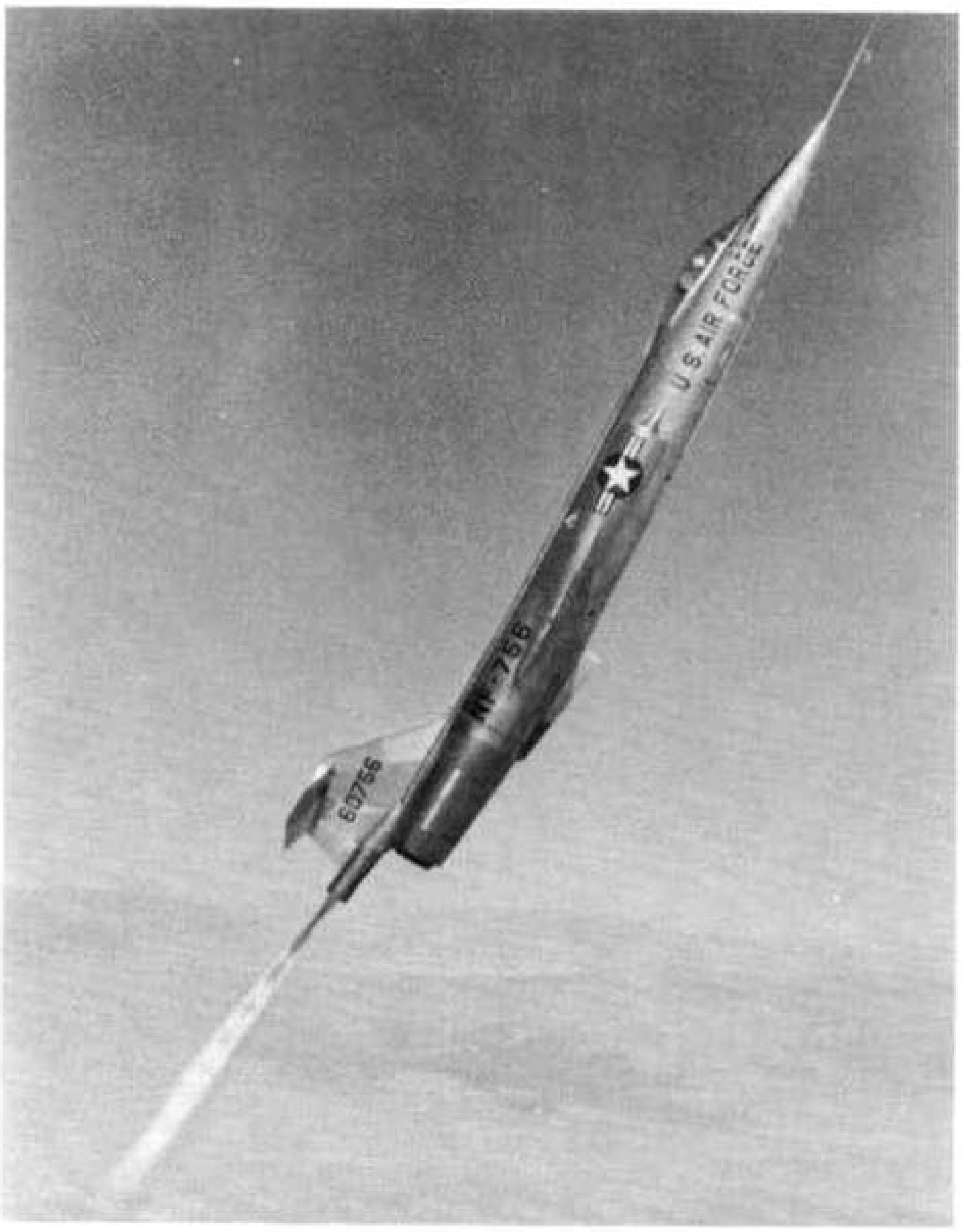
The single-seat F-104C (77 built) and also the two-seat D (21 built) were developed for Tactical Air Command, and featured 15,000lb (6804kg) thrust afterburning J79-GE-7 engines, blown flaps to increase lift and shorten the landing run, provision for in-flight probe-and-drogue refuelling, and equipment for ground-attack work. The C had a 25 per cent increase in vertical tail area and the rudder was powered and provided both yaw-damping and directional control with a single surface. Both these modifications were first introduced on late-production F-104Bs.

The F-104C served with but one Tactical Air Command wing, the 479th at George AFB, California, which deployed some of its aircraft to Vietnam in 1964 to counter the threat posed by MiG fighters. In the event, the F-104Cs were employed mostly on ground attack and the type was withdrawn at the end of 1965, only to be returned to Vietnam in 1966 following the début of the MiG-21 in North Vietnamese service.

Japan bought 20 F-104DJ trainers for assembly by Mitsubishi for the Japanese Air Self-Defence Force. Another two-seater based on the D model was the F-104F, 30 of which were delivered by Lockheed to the Federal German Luftwaffe.

As early as 7 May 1958, a YF-104A flying from Palmdale set a world altitude record of 91,249ft (28470m), and on 14 December 1959 an F-104C took the record to 103,389ft (31513m). The Starfighter's high-altitude capabilities were further enhanced in 1963 when three F-104As were converted to NF-104As with rocket boost, one setting a world record of nearly 119,000ft (36273m) in that year. The NF-104As were used at the

Fig. 14 *Three F-104As were converted to NF-104As with rocket boost in 1963 and one of them set a world altitude record of nearly 119,000ft (36273m) that same year.*



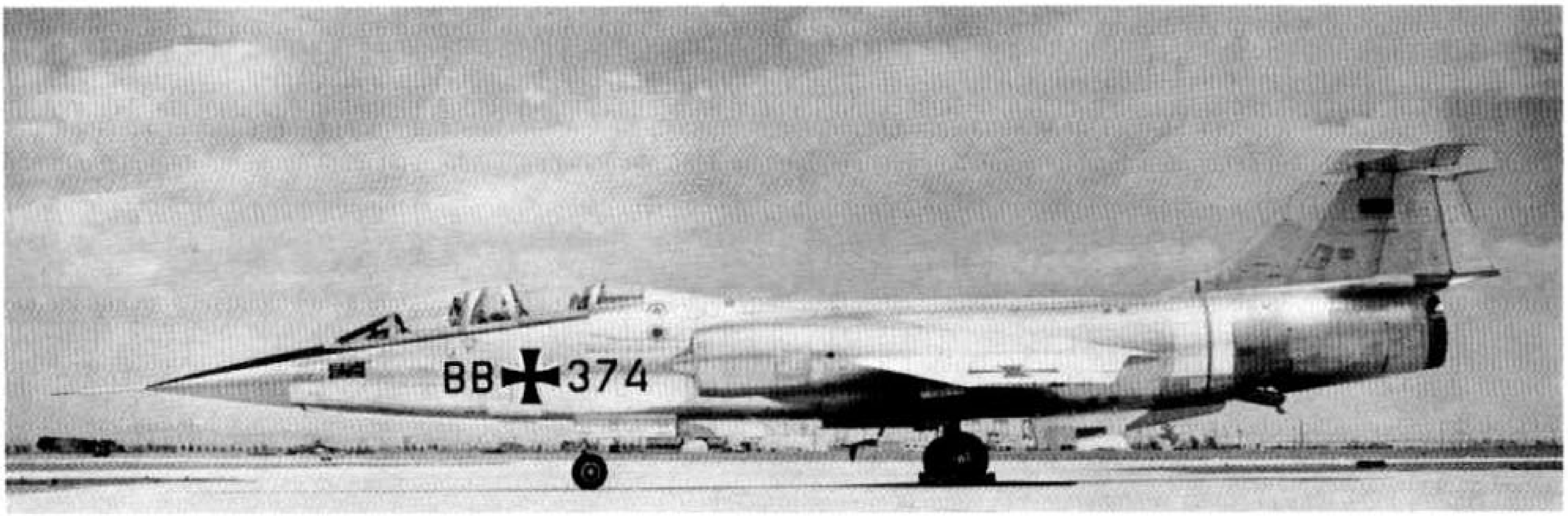
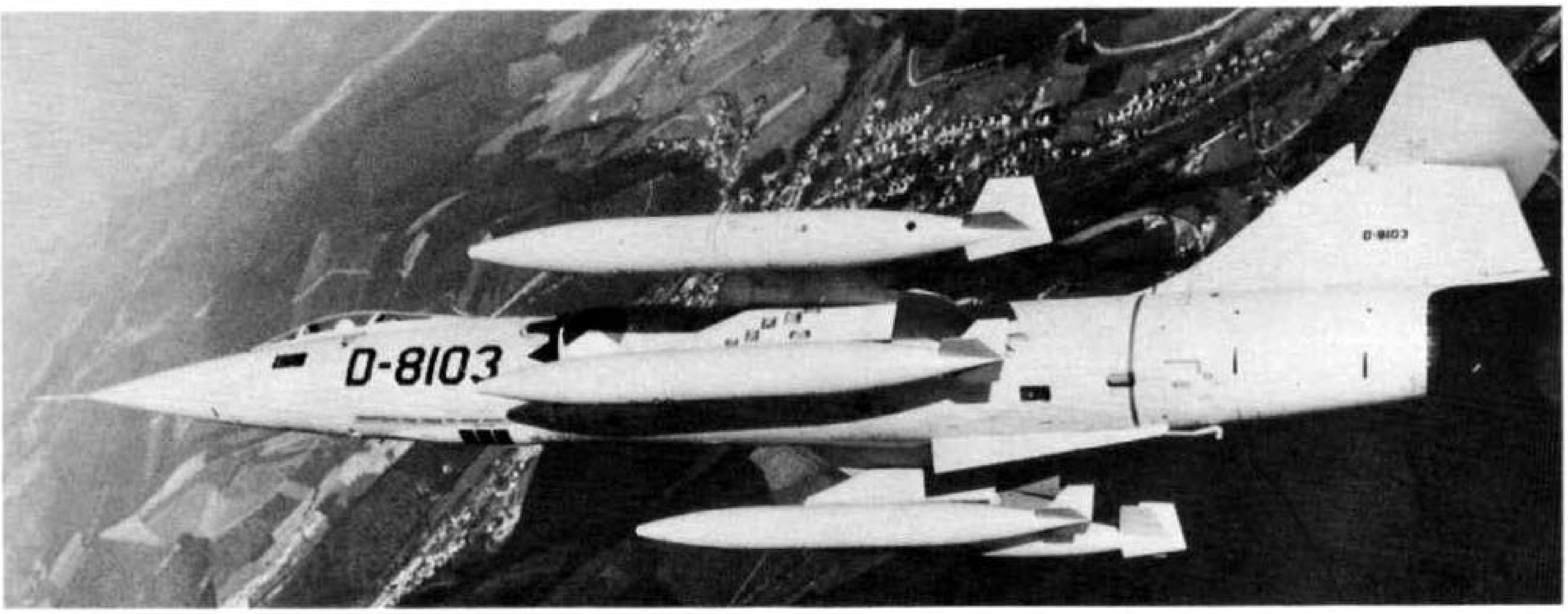


Fig. 15 *An F-104F in Luftwaffe insignia. Although the Starfighter is notorious for its high accident rate in Luftwaffe service, the type is technically sound and is certainly one of the most remarkable aircraft yet built.* Fig. 16 *An RF-104G of 306 Squadron, Royal Netherlands Air Force, displays the camera fairing below the forward fuselage as it banks over the Dutch countryside.*



USAF Aerospace Research Pilots School at Edwards AFB, California. Three other Starfighters were used by the National Aerospace and Space Administration for astronaut training with the designation F-104N.

Ex-USAF Starfighters were supplied to Taiwan and Pakistan, some of the latter's machines seeing action in the air support role during the Indian-Pakistan conflict of September 1965.

Although little used in America, because the USAF considered it to be not as successful as the larger fighters which gradually appeared, the Starfighter generated what was hitherto the greatest international co-operative venture in the history of the aerospace business. The seeds of this were sown in 1958 when Lockheed developed, as a company-financed project, the Mach 2.2 F-104G, aimed primarily at a German requirement for a close-support strike fighter.

Based on the F-104C, this featured an uprated engine, a much strengthened structure, increased vertical tail area as on the F-104B and D, manoeuvring flaps, very complete radar and electronics (for gunnery, rocket-firing, bombing and navigation), and manoeuvring autopilot, an upwards (instead of downwards) ejection seat, and provision for bigger and more versatile warloads.

In March 1959 Germany signed a contract with Lockheed for development of the F-104G and its subsequent production under licence in Germany, but eventually the plans were modified and the F-104G was built by German, Dutch and Belgian consortia for the Luftwaffe and Marineflieger (604), the Royal Netherlands Air Force (95) and the Belgian Air Force (99); and for the Italian Air Force (124) by an Italian consortium led by Fiat. In addition, Germany obtained a further 96 F-104Gs from Lockheed, while Belgium and Italy obtained one each, these machines being supplied through the Military Assistance Programme. Lockheed flew the first F-104G at Burbank on 5 October 1960 and delivery to Germany began in May 1961. The first European-built F-104G followed in August, from the German consortium.

As part of the US Military Assistance Programme, Canadair built 140 US-financed F-104Gs for supply to Denmark (25), Greece (36), Norway (16), Spain (25) and Turkey (38). The first of these flew at Montreal on 30 July 1963 and followed production of 200 basically G-model Starfighters, but minus the Vulcan cannon, for the RCAF, which for a short time called them CF-111s before redesignating them CF-104s. The RCAF also received 38 Lockheed-built CF-104D trainers, which again were based on the F-104G.

Basically similar to the F-104G but equipped primarily as an interceptor is the JASDF's F-104J, three of which were built by Lockheed (first flight 30 June 1961) and a further 207 built by Mitsubishi in Japan.

A two-seat version of the F-104G was developed by Lockheed as the TF-104G and 167 were supplied to Germany, 14 to the Netherlands and 29 to other European air forces. Yet another variant of the G model is the RF-104G multi-role reconnaissance aircraft.

The sole type of Starfighter built new since 1967 has

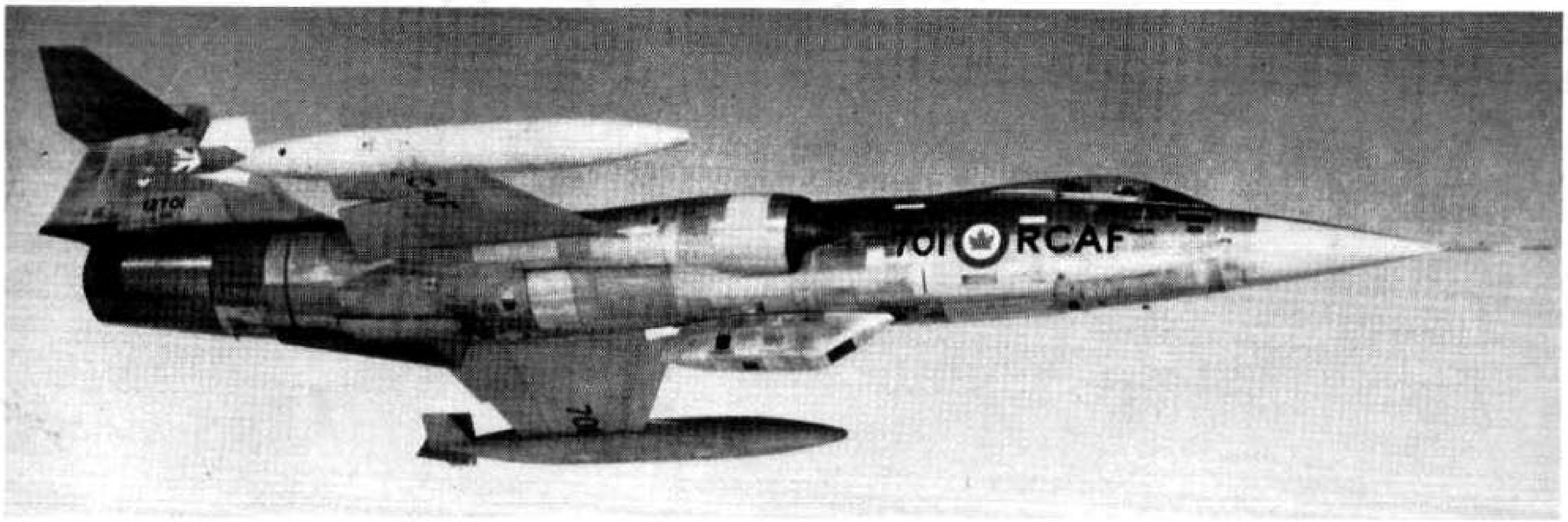
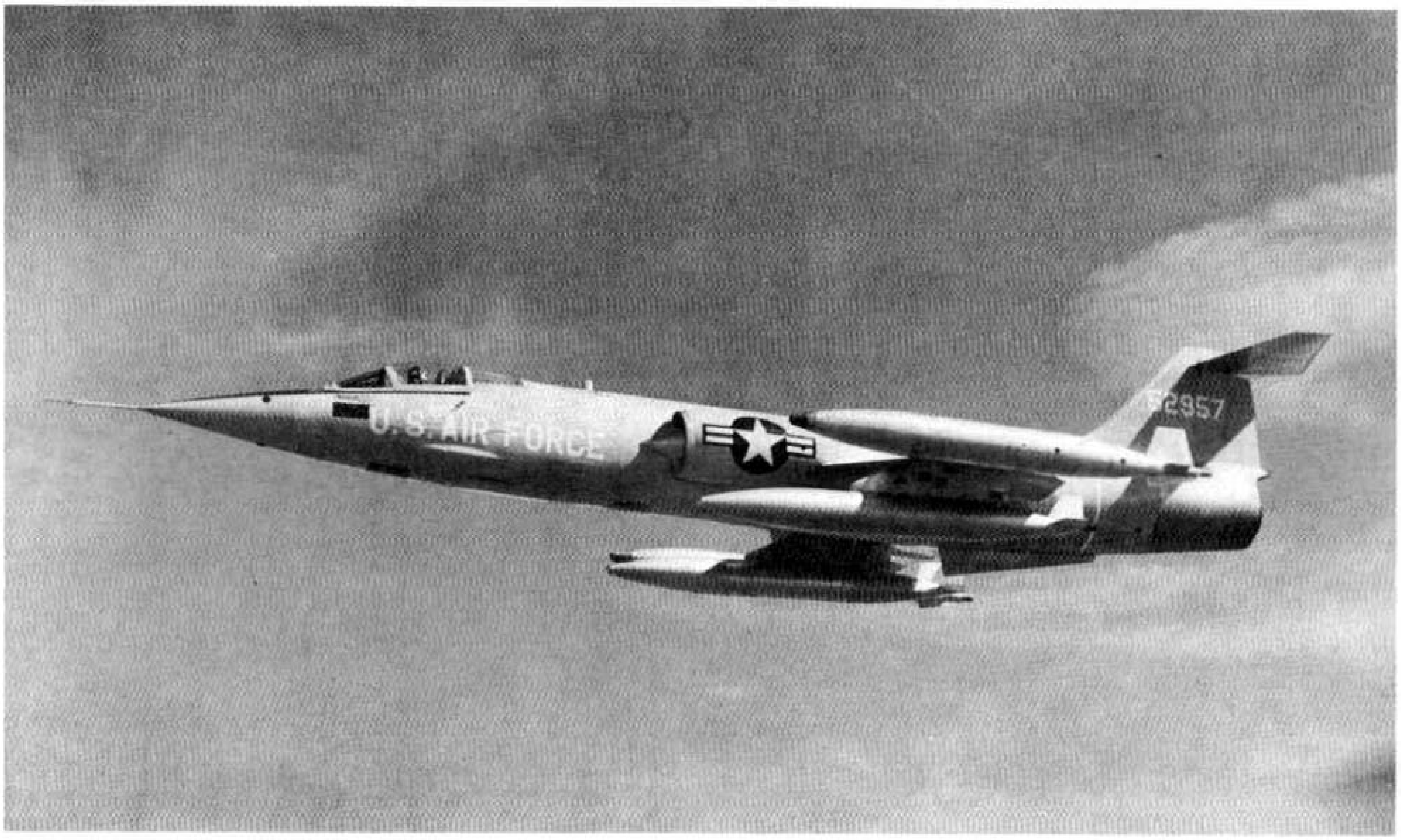


Fig. 17 *A CF-104 from RCAF Station Cold Lake carrying a reconnaissance pod containing four 70mm Vinten cameras.* Fig. 18 *A QF-104A target drone – in this case piloted.*



been the Italian F-104S, basically an air-superiority fighter armed with two Raytheon Sparrow air-to-air missiles (hence the suffix letter "S") but also used as a fighter-bomber. Developed jointly by Lockheed and Fiat/Aeritalia, this model has a more powerful J79 engine, nine external stores points, and can attain Mach 2.4. The first of two Lockheed-built prototypes flew in 1966, and between 1969 and 1979, when production ceased, 246 F-104Ss were manufactured in Italy. The Italian Air Force took 206 and the rest went to Turkey.

The world-wide total of Starfighters built was 2,583, including the two XF-104s

At given periods over more than two decades the Starfighter has been the principal fighter aircraft flown by 15 different nations: Belgium, Canada, Denmark, West Germany, Greece, Italy, Japan, Jordan, the Netherlands, Norway, Pakistan, Spain, Taiwan, Turkey and the USA. It remained in the USAF's inventory until January 1974, but many countries will retain the Starfighter in their operational inventories until the mid-1980s.

SPECIFICATION – F-104G

Powerplant: One 15,800lb (7165kg) thrust General Electric J79-11A turbojet with reheat.
Dimensions: Span (less tip tanks) 21ft 11in (6680mm); length 54ft 9in (16688mm); height 13ft 6in (4115mm).
Weights: Empty, 14,082lb (6387kg); maximum loaded, 28,779lb (13054kg).
Performance: Maximum speed 1,450mph (2,330km/h or Mach 2.2); initial climb 50,000ft (15250m)/min; service ceiling 58,000ft (17680m) (zoom ceiling over 90,000ft (27400m); range with maximum weapons approximately 300 miles (483km); range with four drop tanks (high altitude, subsonic) 1,380 miles (2220km).
Armament: Most versions have centreline rack capable of carrying 2,000lb (907kg) and two underwing pylons each rated at 1,000lb (454kg); additional racks for small missiles such as Sidewinder on fuselage, under wings or on tips. Certain versions have reduced fuel and one 20mm M-61 Vulcan rotary cannon in fuselage.

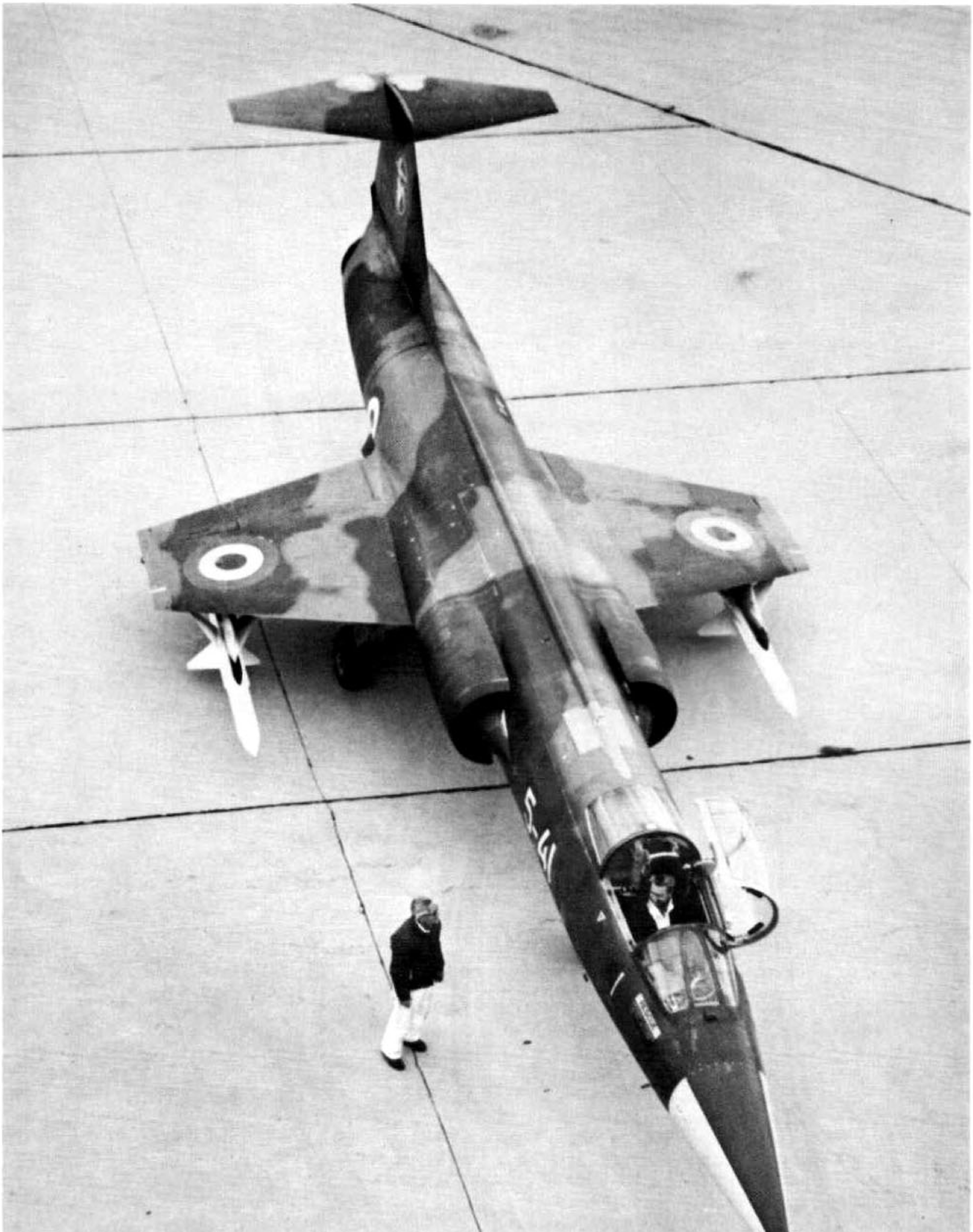


Fig. 19 *The prototype of Italy's F-104S Super Starfighter on the ramp at Palmdale in 1967 carrying advanced Sparrow radar-guided missiles.*

DIE LOCKHEED F-104 STARFIGHTER

Die Lockheed F-104 Starfighter, mit dem Spitznamen "die bemannte Rakete" bezeichnet, stellte eine revolutionäre Konzeption von Jäger dar. Sie wurde aufgrund der Kampferfahrungen der U.S. Luftwaffe in Korea von dem berühmten "Skunk Works" Forschungsteam des "Kelly" Johnson entwickelt und danach von den Raum-und Luftfahrtindustrien in sieben Nationen hergestellt. Insgesamt wurden 2583 Starfighters gebaut, einschließlich der zwei; XF-104 Prototypen. Die Starfighter flog zum ersten Mal im Februar 1954 und stellte im Jahre 1958, ihrem ersten Dienstjahr bei der USAF, neue Rekorde für Geschwindigkeit, Flughöhe und Steigleistung auf. Von dem General Electric J79 Motor, im Grunde ein Variant der Dash 11+19 Versionen, betrieben, fliegt die F-104 bei Geschwindigkeiten über Mach-2 und bei einer Dienstflughöhe von über 1800m. In den 60er Jahren war die Starfighter eine der meist geflogenen Jäger der Welt.
Sie ist auch eine der umstrittensten Maschinen der Geschichte infolge der zahlreichen Flugunglücke, in die sie verwickelt worden ist, wenigstens bei der deutschen Luftwaffe. Das Flugzeug ist jedoch technisch einwandfrei: und bleibt zweifellos eine der hervorragendsten Maschinen in der Geschichte des Flugwesens. Im Laufe von über zwei: Jahrzehnten wurde die F-104 als der führende Jäger von 15 verschiedenen Nationen geflogen: Belgien, Kanada, Dänemark, der BRD, Griechenland, Italien, Japan, Jordan, den Niederlanden, Norwegen, Pakistan, Spanien, Taiwan, der Türkei:, und den U.S.A. Die Starfighter diente bei; der U.S.A.F. bis Januar 1974, wird aber bis in die 80er Jahre zu dem Kriegsarsenal mehrerer Länder weiterhin zählen.

Abb. 1 ***Flugaufnahme der ersten XF-104.***

Abb. 2 ***Die zweite YF-104 wurde der Presse im April 1956 vorgeführt aber ihre Lufteinlässe wurden aus Sicherheitsgründen abgedeckt.***

Abb. 3 ***Noch eine Aufnahme der zweiten YF-104 bei der Pressevorführung in Palmdale. Zu beachten ist das äußerst engspurige Fahrgestell.***

Abb. 4 ***Flugaufnahme der zwei XF-104 zusammen. Die zweite Maschine stellt die dolchförmige Draufsicht des Typs deutlich zur Schau.***

Abb. 5 ***Nahaufnahme einer zweisitzigen F-104B, die die messerdünnen Flügel und das höchst originelle Hauptfahrgestell zeigt.***

Abb. 6 & 7 ***Eine F-104A mit Sidewinder Luft/Luftraketen an den Flügelspitzen.***

Abb. 8 ***Das Cockpit einer F-104C.***

Abb. 9 ***Drei F-104As mit Sidewinder Raketen ausgerüstet.***

Abb. 10 ***Eine F-104A in Tarnbemalungsmuster im Einsatz gegen Nord-Vietnam. Zu beachten ist die Lufttankens-Sonde.***

Abb. 11 ***Eine schöne Staffelformation von C-Maschinen der 479. Tactical Fighter Wing mit Abwurftanks an den zentralen und äußeren Aufhängevorrichtungen.***

Abb. 12 ***In diesem Photo, das anlässlich der Jahrhundertfeier des Amerikanischen Bürgerkriegs aufgenommen wurde, wird ein handgekurbeltes Gatling-MG vom Jahre 1861 mit der Gatling-artigen Vulcan Kanone der F-104 verglichen.***

Abb. 13 ***Noch eine Staffelformation von F-104Cs der 479 TFW. Zu beachten ist die Luftankens-Sonde der zweiten maschine.***

Abb. 14 ***1963 wurden drei F-104As in NF-104As mit zusätzlichem Raketenantrieb umgebaut, und imselben Jahr stellte eine davon einen Weltrekord für Höhenflug von fast 36273m auf.***

Abb. 15 ***Eine F-104F mit dem Hoheits-Abzeichen der BRD. Obgleich die Starfighter wegen der vielen Unglücke im Dienst bei der BRD in Verruf geraten, ist, hat sich der Typ als technisch einwandfrei: bewährt und gilt als eines der erstaunlichsten Flugzeuge, das je gebaut wurde.***

Abb. 16 ***Eine RF-104G des 306. Geschwaders des Königlichen Nederländischen Luftwaffe, zeigt die Verkleidung der Kameraanlage unter dem Rumpfvorderteil, indem sie in Schräglage über der holländischen Landschaft fliegt.***

Abb. 17 ***Eine CF-104 von der RCAF Station Cold Lake mit einer Aufklärungshülse versehen, in die vier 70mm Vinten Photoapparaten installiert sind.***

Abb. 18 ***Ein QF-104A Zielscheiben-Fernlenkflugzeug, in diesem Fall bemannt.***

Abb. 19 ***Der Prototyp der italienischen F-104S Super Starfighter auf der Rampe in Palmdale im Jahre 1967 aufgenommen, mit den hochentwickelten Sparrow radargelenkten Raketen ausgerüstet.***

BILDTAFEL 1
Lockheed F-104G Starfighter der 34. Jägergruppe der bundesdeutschen Luftwaffe. **Maßstab 1/96**

(1) Einzelheit des Flügelspitzen-Abwurftanks.
(2) Einzelheit des Gruppen-Abzeichens.
(3) Einzelheit der Aufhängevorrichtung und des Bordtanks an der unteren Tragfläche.

BILDTAFEL 2
Einzelheiten der Abwurftanks und Raketen.

(1) Kanzeldach öffnet sich seitwärts.
(2) Formationslicht.
(3) Abschußvorrichtung.
(4) Sidewinder Luft/Luft-Rakete.
(5) Bordtank-Luftteinlaß.
(6) Flügel-Aufhängevorrichtung.
(7) Unterfläche des Backbord-Flügels.
(8) Formationslicht.
(9) Flügel-Abwurftank.
(10) Flügelspitzen-Abwurftank.

BILDTAFEL 3
Lockheed F-104G Starfigher

(1) Flügel-Formationslicht.
(2) Luftbremse voll ausgefahren.
(3) Oberes Rumpflicht.
(4) Genaue Draufsicht des Flügels.
(5) Luftbremse.
(6) Hauptsächlicher Landungsscheinwerfer (an beiden Seiten).
(7) unbelastet.
(8) ruhend belastet.
(9) Rolllicht.
(10) Strahlrohr für 10mm M-61 Vulcan Drehkanone.
(11) Notrutsche (Typ Link).
(12) Rotes Navigationslicht.
(13) Vordere Klappen des Hauptfahrgestells öffnen sich völlig nur beim Ein-und Ausfahren des Fahrwerks, bleiben aber teilweise offen nach dem Ausfahren.
(14) Durchschnitt des Flügels an der Wurzel.
(15) Grundlinie.
(16) Rotes Warnlicht (gegen Zusammenstöße), weißes Navigationslicht (an den beiden Seiten).
(17) Fach für Bremsfallschirm.
(18) Landehaken.
(19) Grünes Navigationslicht.
(20) Temperatursonde für Luftdatenverarbeiter.
(21) Angriffswinkel-Sensor.
(22) Höhenflosse voll eingefahren.
(23) Höhenflosse voll ausgefahren.
(24) Pitotrohr.
(25) Unteres Rumpflicht.
(26) Rotes Zusammenstoß-Warnlicht am oberen Rumpf bei einigen späten Modellen. Hinteres Navigationslicht (weiß) unter bei einigen japanischen Flugzeugen.

BILDTAFEL 4
Einzelheiten des Ruders und der Zweisitzkanzel bei F-104 A,B,C

(1) Kleines Ruder bei der F-104A, sowie der ersten F-104B und F-104C installiert.
(2) Zweisitz-Kanzel bei F-104B und F-104D installiert.
(3) Zweisitz-Kanzel bei TF-104 installiert.
(4) Rumpffahrgestell bei Zweisitz-Modellen zieht sich rückwärts ein und liegt 18,8cm weiter nach hinten als bei Einsitz-Modellen.

BILDTAFEL 5
Markierungen Maßstab 1/96

(1) F-104G des 331. Geschwaders der königlichen norwegischen Luftwaffe.
(2) F-104G des 306. Geschwaders der königlichen nederländischen Luftwaffe.
(3) TF-104G der griechischen Luftwaffe.
(4) F-104G der 4. Aerobrigata der italienischen Luftwaffe.
(5) F-104 DJ der taiwanischen Luftwaffe.
(6) F-104J der 207. Geschwaders der Japanese Air Self Defence Force (Japanische Notwehr-Luftstreitkräfte.)

TECHNISCHE DATEN – F-104G

Triebwerk: Ein 7165kg – Schubkraft General Electric J79-11A Turbofächer-Motor mit Wiedererwärmenanlage.
Abmessungen: Spannweite (ohne Spitzenbordtanks) 6680mm; Gesamtlänge 16688mm; Gesamthöhe 4115mm.
Gewichte: Leergewicht 6387kg; max. Stargewicht 13054kg.
Leistungen: Höchstgeschwindigkeit 2330km/h 6e.62w. Mach 2.2; Steigleistung 15250m/min; Dienstflughöhe 17680 (Hochziehensgipfelhöhe über 2220km). Dienstreichweite mit voller Bewaffnung 2483km; Dienstreichweite mit vier Abwurftanks (im Unterschallhöhenflug) 220km.
Bewaffnung: Die meisten Ausführungen sind mit einer Zentralaufhängevorrichtung versehen, mit einer Tragfähigheit von 907kg, sowie zwei Vorrichtungen unter den Flügeln (Tragfähigkeit 454kg); zusätzliche Vorrichtungen für kleine Raketen (z.B. Sidewinder) am Rumpf, unter den Flügeln oder an den Flügelspitzen angebracht. Einige Ausführungen haben kleinere Bordtanks aber eine 20mm M-61 Vulcan Drehkanone im Rumpf.